



COLONY OF MAURITIUS

Annual Report
OF THE
Department of Agriculture
for the year 1961

[PRICE : R. 1.25]

PRINTED AND PUBLISHED BY
J. ELIEL FÉLIX, I.S.O., GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS
DECEMBER 1962

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No. 33 of 1962



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Department of Agriculture,
Redit,
26th September, 1962.

Sir,

I have the honour to submit the Annual Report of the Department of Agriculture for the year 1961.

I have the honour to be,

Sir,

Your obedient servant,

M. D. FFRENCH-MULLEN,

Director of Agriculture.

THE HONOURABLE THE MINISTER OF AGRICULTURE AND NATURAL RESOURCES,
Ministry of Agriculture and Natural Resources,
Port Louis.

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Annual Report of the Department of Agriculture for the year 1961

1. General Review

There has been no important change during 1961 in the policy of the Department of Agriculture. It continues to centre around the maximum utilisation of all agricultural land and water resources to the best advantage of the people of Mauritius. Closely connected with this objective is the development of the livestock industry as regards the production of milk, meat and poultry products. In regard to the framing of policy the Ministry of Agriculture and Natural Resources and the Department are assisted in an advisory capacity by the Board of Agriculture, Fisheries and Natural Resources.

2. In order to fulfil the task assigned to it by the Ministry, the Department is organised into 13 divisions employing 306 officers including a Director and two Deputy-Directors who plan and carry out the experimental, development and extension work of the Department.

3. Policy cannot be implemented without trained personnel. A primary objective of the Department is the maintenance of an adequate technical staff. Nearly all the professional and technical officers of the Department are initially provided by the College of Agriculture which functions as a division of the Department. Specialist staff complete their training overseas. In order to meet the increased demand for trained personnel both in the Department and in the private sector, a new scheme of study, which had been under consideration for some years, has now been implemented. The scheme for the diploma course provides for the training of two streams of students, one in 'General Agriculture' and the other in 'Sugar Technology'.

4. The work of the Department is broadly divided into:—

- (a) experimental, to study crops and livestock in the various environmental conditions obtaining in Mauritius;
- (b) extension, to advise and assist farmers with a view to their obtaining the maximum return from their farms.

5. During the year under review, the Department has maintained the essential services which it continues to provide for the Sugar Industry, namely the Sugar Millers and Planters Central Arbitration and Control Board which regulates the sale and purchase of canes, the College of Agriculture which provides the industry with its cadre of trained staff, and the Extension Service for small sugar-cane planters whose main aim is to raise the small planters yields of cane to a figure more comparable with those of estates. The Plant and Animal Inspection Service and the ultimate responsibility for Plant

and Animal Quarantine, including that of the sugar-cane, remain the responsibility of the Department although, by mutual agreement with the Mauritius Sugar Industry Research Institute, the latter now maintains and supervises the working of the Cane Quarantine Greenhouse. The Department has worked in close co-operation with the Sugar Industry Research Institute and other organisations, and has directed the administration of the Sugar Industry Rehabilitation Funds which include the Pointe aux Sables Cane Nurseries for the production of disease-free planting material for small cane planters and the Small Planters Mechanical Pool.

6. The development of agricultural industries other than sugar has continued to be the major concern of the Department. No effort has been spared to promote schemes for the encouragement of the production of tea, tobacco, aloe fibre, livestock products and foodcrops.

7. The Tea Industry is controlled by the Tea Control Board under the chairmanship of the Director of Agriculture. The repair of the damage caused by the 1960 cyclones to young tea plantations was completed with the replacement of all plants destroyed by seedlings from nurseries established for this purpose and by the planting of seed at stake in some areas. Very little new land was cleared for tea by project planters. With the revision of the Income Tax Law and the loan facilities now being offered to tea planters through the Agricultural Bank, it is expected that they will now make every effort to complete the clearing and planting of their holdings. Government continued, albeit on a reduced scale, to clear land for tea. The system of developing land was drastically revised with a view to preventing soil erosion reducing costs and improving ecological conditions in the field. The revised methods of development were tried out on one hundred acres of land which was surveyed, strip cleared on the contour, leaving filter strips in natural vegetation between the cleared strips and all natural waterways left uncleared. Drains were dug on the contour by machine and hand-finished and were designed to take the heaviest rainfall without overtopping. The area was planted and the early growth of tea is promising. The testing of selected plants for yield, quality and their vegetative propagation potential in mist propagators was continued with encouraging results.

8. The quality of tea exported during the year 1961 would appear to have improved considerably as the average selling price at the London auctions showed an increase of nearly 2d per lb compared with a reduction in the world average price of 2d per lb. The quantity sold through the auctions more than doubled compared with the previous record sales in 1959.

9. The Nuwara Eliya Tea Estate Company (Mauritius) Ltd. continued to operate the Government Tea Factory at Chartreuse. The factory recommenced operating in January after completion of repairs following the cyclones of 1960.

10. The Tobacco Industry is controlled by the Tobacco Board of which the Director of Agriculture is Chairman. The Board provides the extension facilities for the industry as well as the grading and marketing organisation

while the Department of Agriculture supplies the research services. The policy of both organisations is to improve the efficiency of the industry with a view to the production of better quality Virginian flue-cured tobacco. Production is programmed in accordance with the requirements of the domestic market which consumes all the tobacco produced. The possibility of an export market for Virginian leaf in view of limited and high cost of production remains remote.

Tobacco planted in the first half of the year made exceptional growth. However, heavy rains at harvest together with severe attacks of Frogeye Spot and Root Knot eelworm adversely affected quality so much so that many producers opted to destroy part of their crop and replant the acreage destroyed later in the year. The Virginian varieties planted in the second half of the year were generally successful being almost free from disease. The end of the crop was destroyed by cyclone 'Beryl'. The Amarello crop yielded well but suffered from adverse weather conditions which affected quality.

11. The Mauritius Hemp Producers' Syndicate continues to control the marketing of aloe fibre, the Government Sack Factory, of which the Director of Agriculture is Chairman and a Deputy Director in charge of management, manufactures sacks from the fibre for local use by the Sugar Industry, which is for practical purposes the sole consumer. Pure aloe sacks and sacks made of a mixture of aloe fibre and imported jute are manufactured. The cost of production of these sacks is higher than the cost of imported jute sacks with the result that the industry has to be subsidised. The annual loss varies and for the year under review, was small compared with previous years because of the high cost of imported jute sacks.

12. The development of the livestock industry, particularly milk and beef production and the expansion of egg and poultry meat production, received considerable attention during the year. The sales of livestock feeds from the Government Feed Factory were again greater than for the previous year, for the third successive year. Boran cattle introduced from Kenya continued to show promise. The dairy cattle artificial insemination service was maintained. The production of day-old chicks was extended to the production of stock for sale to breeders up to point of lay. Additional poultry foundation stock was imported both for egg and broiler production. The production of breeding stock of Large White and Berkshire pigs was continued in Mauritius and Rodrigues respectively.

13. Foodcrop production was encouraged by the launching of a "Produce More Food Campaign" both in Villages and on Sugar Estates and Large Plantations. Villagers were encouraged to grow fruit trees, to have a kitchen garden and to keep a few chickens and other small livestock for their own needs. The campaign was started by extension officers at eight villages, distributed throughout the Island and the results obtained have been encouraging.

The response of Sugar Estates and Large Plantations particularly sugar estates with factories, to the "Produce More Food Campaign", organised by the Chamber of Agriculture, was gratifying. 3,260 arpents of estate land were cultivated partly directly by estates and partly by tenants and employees of the estates. In addition, 274 arpents of land were made available to the Ministry of Agriculture and Natural Resources for foodcrop production. 13 large planters out of 34, who co-operated with the scheme cultivated directly 71 arpents and indirectly 191 arpents which were issued rent-free to employees of the estate or rented to tenants. Figures of acreage cultivated are not available from 21 large planters.

Technical guidance was given to farmers by the Extension Service. Farmers were encouraged to visit demonstration plots laid out to illustrate the benefits that can be derived from good husbandry. Overall production of foodcrops suffered from a prolonged drought at the beginning of the year; total production being 22,000 metric tons compared with 50,000 metric tons in 1960.

14. Advice was given to farmers on the land settlements schemes on methods of cultivation, use of fertilizers and control of soil erosion. Despite the moratorium granted in 1960 on the payment of rent following cyclone 'Carol', rent collections have been unsatisfactory. In order to help tenants meet their liabilities, the dates of payment of instalments of rent due have been fixed in such a way that, when payable, tenants are most likely to have money available.

15. The experimental work at the various experiment stations was carried out as planned. Owing to drought a sufficient quantity of tobacco leaf was not available and it was therefore not possible to continue large scale experiments with steam curing of tobacco during the year. Virginia and Burley varieties, introduced from the United States three years ago, are now being tested in the field by tobacco growers. Promising results were obtained as some varieties have shown high resistance to disease combined with good yield and quality of leaf.

Additional species of grass were imported for trial. In the 40" to 80" rainfall zone, the most promising were *Digitaria pentzii*, *Digitaria decumbens*, *Cenchrus ciliaris*. In the wetter parts of the Island *Setaria sphacelata*, *Pennisetum purpureum* and *Chloris gayana* were of value.

Potato variety trials were continued. Assistance was given to potato planters in controlling pests and diseases by the provision of a mobile spraying unit comprising a jeep equipped with sprayers and a trailed water tank.

16. Some twenty silage pits were built at villages with the help of farmers and filled successfully with chaffed cane tops. Interest in silage has increased for feeding in the months of May/June when there is often a shortage of fodder.

17. A considerable number of fruit trees were blown down in the 1960 cyclones. The demand for fruit trees from Government Nurseries has risen. An improved technique for litchi layering has increased the rate of production and lowered costs by 75 per cent. Mist propagation techniques have also reduced costs of production by 75 per cent and considerably increased the rate of propagation. Work on citrus propagation was continued and early results show considerable promise.

18. The price of vegetable seeds was revised downwards so as to encourage planters to grow crops from selected, acclimatised seeds. The production of vegetable seeds was again increased during the year under review. Seeds were grown on a total of 40 acres at the various experiment stations.

19. With effect from the 1st October, the Division of Veterinary Services was transferred back to the control of the Director of Agriculture.

20. Six Boran bulls and 15 heifers were imported from Kenya as well as two British Alpine bucks and five does from the United Kingdom. The policy of upgrading of milch cattle through artificial insemination was continued; the overall conception rate of 66 per cent was satisfactory.

The programme of progeny testing of poultry foundation stock was completed. Selection was based on the dam's production to 500 days of age and on the progeny's past record; the average production for dams being 239 eggs. The poultry scheme commenced the sale of day-old chicks of White Leghorn and Rhode Island Red breeds on the completion of selection as well as hatching eggs. The 404 and 606 hybrid strains of poultry from Thomber's with their respective parent stock, were imported from the United Kingdom to assess the economic value of hybrids under local conditions. Also imported from the United Kingdom were eight exotic breeds of poultry and pheasants for purposes of teaching and exhibition.

21. Investigations were carried out on a number of diseases affecting crops other than sugarcane. Diseases occurring on tobacco, tea, potato, maize, onion, garlic, leeks, tomato, ginger, groundnut, beans, peas, pigeon peas, cabbage, carrots, chillies, cucurbits, egg plant, lettuce, banana, citrus, and pineapple were investigated. Tobacco seed disinfection, soil fumigation and disease control in tobacco seed beds have become established practices.

22. The Department continued to control the importation of plant and plant parts under regulations in line with the co-ordinated legislation under the Inter-African Phyto-Sanitary Convention. The importation of animals and animal products were similarly controlled. Quarantine services for necessary imports of live animals and plants were provided. Difficulties were encountered with the fumigation of imported fruit with methyl bromide during the hot weather under atmospheric conditions. The possibility of overcoming these difficulties in the hot weather by the use of EDB is under investigation.

23. The snail *Euglandina rosea* was again recovered throughout the year and can now be considered established. Breeding of this snail, which is a predator of the giant snail *Achatina fulca*, was continued for purposes of further liberation. The predator snail *Gonaxis* was introduced from Hawaii and showed considerable promise in the laboratory. Unfortunately, almost all *Gonaxis* were lost during repairs to the breeding room.

24. Fruit flies caused little trouble during the year; the Natal fruit fly, *Ceratitis rosa*, a serious pest of orchard fruits, was very rare as was the cucurbitaceous fruit flies, *Dacus* spp. The introduction of parasites from Hawaii was continued and parasites were also introduced from France. Experiments with lebaycid were continued and good control of these pests was achieved on cucurbits and peach.

25. The Agricultural Chemistry Division, apart from miscellaneous analytical work for the public, undertook all the analytical work of the other divisions of the Department in connection with their experimental programmes. The main products analysed were livestock feeds, silage, fodder, grasses, milk and soils.

26. The Engineering Division undertook all departmental cyclone reconstruction work in addition to its normal commitments. It maintained and operated the Livestock Feed Factory at Richelieu and ensured, in close co-operation with the Animal Husbandry Officer (who is responsible for formulations), the preparation of a variety of concentrate feeds for the various classes of livestock reared in Mauritius. The popularity of these products increased markedly in 1961, sales totalling Rs 1,156,000 as compared with Rs 1,058,000 in 1960, Rs 840,000 in 1959 and Rs 489,746 in 1958.

27. Experimental work on fish farming was continued with special emphasis on productivity tests under mono-sex culture and in association with livestock. The work was handicapped by a prolonged drought at the beginning of the year.

28. Oyster culture investigations continued along the lines suggested by Professor Pierre Lubet. The growth of young oysters distributed for farming was encouraging. A new breeding centre was created at Pointe de Flacq by private enterprise with the help and advice of fisheries officers.

29. Preliminary experiments on feeding livestock with concentrate feeds containing 20 per cent dry defecation scums, a by-product in the manufacture of sugar, has yielded encouraging results.

30. An expert from Canada has studied local agricultural marketing conditions and has submitted a preliminary report recommending the establishment of an Agricultural Marketing Board.

31. In Rodrigues work on the development plan continued. 1,063 unit farms situated in the uplands, 406 lowland farms and 844 vegetable plots have been developed and issued to farmers since the inception of farm development and land rehabilitation scheme, 589 farms of all types having been

prepared and issued during the year under review. The planting of shade trees on the cattlewalk in Rodrigues was continued at a rate of 10 trees per acre, instead of 60 as heretofore, as was the reafforestation of steep slopes, hilltops and the provision of windbreaks. Pangola grass has shown sufficient promise in Rodrigues to justify the commencement of work at the end of the year, on the establishment of three experimental peasant dairy farms. The stocking of breeding centres with Creole cows was completed and 38 cows and 66 young castrates were sold to farmers together with 220 young male and 178 young female pigs. 1,101 bottles of ghee were exported from breeding centres and small quantities of butter were made for local consumption.

The estimated value of agricultural produce exported inclusive of live-stock and fish was Rs 1,108,490.

II. Boards and Committees

32. The Director of Agriculture or his representative served on the following boards and committees:—

- Agricultural College Advisory Board
- Board of Examiners of the College of Agriculture
- Board of Examiners for the Registration of Agricultural Chemists
- Comité de Collaboration Agricole Maurice-Reunion-Madagascar
- Customs Tariff Advisory Board
- Cyclone and Drought Insurance Board
- Fisheries Committee
- Irrigation Committee
- Land Acquisition Board
- Land Settlement Committee
- Malaria Advisory Board
- Mauritius Sugar Industry Research Institute Executive Board
- Mauritius Sugar Industry Research Advisory Committee
- Sugar Industry Rehabilitation Fund Committee
- Sugar Industry Reserve Fund Committee
- Sugar Millers' Rehabilitation Fund Committee
- Sugar Planters' Rehabilitation Fund Committee
- Tea Control Board
- Tobacco Board

III. Board of Agriculture, Fisheries and Natural Resources

33. The Board functions under Ordinance No. 29 of 1957. The following committees were set up by the Board for specific purposes:—

- (a) The Fisheries Committee
- (b) The Land Settlement Committee
- (c) The Irrigation Committee
- (d) The Cane Release Committee

IV. Mauritius Chamber of Agriculture

34. The Chamber of Agriculture continued to play its important role in the agricultural affairs of Mauritius. Its representatives took part in the annual series of meetings between the Commonwealth Sugar Exporters and officials of the Ministry of Agriculture, Fisheries and Food in the United Kingdom in connection with the Commonwealth Sugar Agreement. Developments in regard to the International Sugar Agreement and the world sugar market were kept under constant review. The Chamber appoints the Committee which administers the Sugar Industry Reserve Fund. It also nominates delegates to the following Boards and Committees: The Customs Tariff Advisory Board, the Agricultural College Advisory Board, the Conseil d'Administration de la Revue Agricole, the Hurricane Loan Board, the Sugar Industry Rehabilitation Fund Committee, the Sugar Millers' Rehabilitation Fund Committee, the Sugar Planters' Rehabilitation Fund Committee, the Electricity Advisory Committee, the Mauritius Sugar Industry Research Institute Board, the Cyclone and Drought Insurance Fund Board, the Sugar Industry Labour Welfare Fund Committee, the Government Sack Factory Board, the Malaria Advisory Board, the Board of Agriculture, Fisheries and Natural Resources, the Tea Control Board, the Labour Advisory Board, the Morris Legacy Fund and the Town and Country Planning Board. The co-operation of the Chamber in the "Produce More Food Campaign" inaugurated in 1961 is acknowledged. The work of this organisation is fully reported in its annual report.

V. Comité de Collaboration Agricole Maurice-Reunion-Madagascar

35. For the first nine months of the year, the Committee operated under the Chairmanship of the Director of Agriculture of Mauritius, and for the remainder of the year under the Chairmanship of the President of the Mauritius Chamber of Agriculture with the Directors of Agriculture of Madagascar and Reunion as Vice-Chairmen. The Committee held its eleventh general meeting on the 11th November, 1961, in Mauritius.

36. Amongst the visits sponsored by the Committee in the three territories the following were of special interest to Mauritius:—

- (a) Visit of Dr. Howard of the Commonwealth Mycological Institute, Mr. Baudin, Phytopathologist of the Research Institute of Madagascar and Mr. Antoine, Phytopathologist of the Mauritius Sugar Industry Research Institute, in connection with the bacterial diseases of sugar-cane in the three territories.
- (b) Visit of Mr. Antoine to Madagascar in connection with the control of Fiji disease.
- (c) Visit of six students of the Mauritius College of Agriculture accompanied by two lecturers to La Reunion.

VI. College of Agriculture

37. The College of Agriculture continued to offer a three-year course leading to the Diploma in Agriculture, an eighteen months course for the certificate in Sugar Analysis and one-year courses in Tropical Agriculture

and Cane Cultivation. With the commencement of the new academic year in May, two diploma courses were offered, one in General Agriculture, and the other in Sugar Technology instead of the single combined course as heretofore.

38. The teaching of Sugar Technology and Engineering was undertaken by officers of the Sugar Industry Research Institute. The teaching of some of the other applied subjects was undertaken by part-time lecturers, mainly officers of the Department of Agriculture and of the Sugar Industry Research Institute.

ENTRANCE EXAMINATIONS AND SCHOLARSHIPS

39. Twenty-seven candidates applied for admission to the Diploma Courses and 25 sat for the entrance examination which was held in April. Of these, 15 satisfied the examiners and were enrolled. No entrance scholarship was awarded. 44 candidates applied for admission to the Tropical Agricultural Course, 29 sat the entrance examination and all failed. 13 candidates were enrolled for the course on Cane Cultivation. 19 candidates applied for admission to the Sugar Analysis Course; 12 were admitted, 2 subsequently withdrew their applications and the course began with 10 students.

STUDENT BODY

40. The number and distribution of students at the College is as follows:—

<i>Course</i>					1961	1960	1959
Diploma	...	...	...	...	49	47	52
Tropical Agriculture and Cane Cultivation	...	...	...	...	13	19	36
Sugar Analysis	...	...	...	...	10	7	6
Part Time	...	...	...	...	—	4	8
TOTAL					72	77	102

41. One student in the Diploma Course left at the end of July. Attendance at the Sugar Analysis Course continued to be poor and by the end of the year only 2 students remained.

EXAMINATION RESULTS AND LAUREATESHIPS

42. The results of the annual examinations held in April are as follows:—

				1961		1960	
				<i>Sat</i>	<i>Passed</i>	<i>Sat</i>	<i>Passed</i>
Diploma course—1st year	...	...	...	25	13	21	12
2nd year	...	...	...	13	13	10	8
3rd year	...	...	...	9	9	19	18
Certificate in Tropical Agriculture and Cane Cultivation	...	...	...	11	9	29	14
Certificate in Sugar Analysis	...	...	...	6	6	5	4

43. Of the 12 failures in the first year examinations, 5 left the College and 7 have had to repeat the year. Special arrangements were made to enable a student from the Government of the Seychelles to read most of the subjects of the second year. Two of the nine candidates of the third year qualified for the honours diploma. A laureateship was awarded to Mr. J. Manrakhan who came out first, to enable him to take a degree in Agricultural Science and Agricultural Economics at the University of Reading.

VISITS OF STUDENTS TO REUNION

44. Under the auspices of the "Comité de Collaboration Agricole Maurice-Reunion-Madagascar" a party of six students from Reunion accompanied by two teachers visited Mauritius. A return visit was paid to Reunion in August by 8 students of the third year of the diploma course, accompanied by the Acting Principal and the Assistant Lecturer in Sugar Technology.

PRESENTATION OF AWARDS

45. The College was honoured by the presence of His Excellency the Governor and of the Minister of Agriculture and Natural Resources at the presentation of diplomas and prizes which was held on Thursday the 28th September. His Excellency the Governor presented the diplomas and prizes and the Minister addressed the assembly.

VII. Central Board

46. The Central Board operates under the Sale of Canes (Control) Ordinance. The executive machinery of the Board is run as a division of the Department of Agriculture.

MEETINGS OF THE BOARD

47. The Board held 18 meetings during the year:—
- 2 meetings relative to the assessment of sugar to planters;
 - 5 meetings relative to changes of delimitation of factory areas;
 - 1 meeting relative to protests against assessments of sugar;
 - 1 meeting relative to closing down of weighbridges;
 - 9 meetings relative to general business.

CANE TESTING

48. 20,998 tests were carried out on the canes of 241 planters or group of planters and 125 millers' estate sections supplying canes to 22 factories. The corresponding figures for the 1960 crop were 13,286 tests in respect of 223 planters or group of planters and 125 estate sections supplying canes to 22 factories.

ASSESSMENT OF SUGAR

49. Following the publication of figures of the provisional assessment of sugar to planters for the 1960 crop two co-operative credit societies and one planter lodged protests against the awards made by the Board. The planter subsequently withdrew his protest, but those made by the co-operative credit societies were heard and rejected.

COSTS OF PRODUCTION

50. To obtain the necessary data to work out production costs, questionnaires were sent to 125 planters, selected according to tonnage of canes produced, and to 23 millers,

TRANSPORT COSTS

51. Before the crop commenced a schedule was issued showing the maximum rate claimable by millers for the transport of planters' canes in each factory area from the various outlying weighbridges to the factory. The schedule was based on the following formulae:—

$C = \text{Rs } (2.30 + .22m)$ for road transport; and

$C = \text{Rs } (2.35 + .65m)$ for rail transport

where "C" is the cost of transport per ton of cane and "m" the number of miles over which transport is effected.

DELIMITATION OF FACTORY AREAS

52. Fourteen applications for changes of delimitation of factory areas were received. Two of the applications were withdrawn; two were granted by the Board and the others were either rejected or not entertained.

PERMITS TO MIDDLEMEN

53. Permits were issued to 58 middlemen for the crop.

COMPLAINTS AGAINST MIDDLEMEN

54. Ninety-five complaints against middlemen were received, most of them being in connection with the payment of compensation paid by the Cyclone and Drought Insurance Fund. In almost all cases it was found possible to get the middlemen and the planters to come to an agreement.

CANE CONTRACTS

55. 13,653 cane contracts were registered compared with 12,800 in 1960. The total number of registered contracts in force in 1961 was 14,153 covering 19,653 planters, an increase on the previous year.

BREACH OF SALE OF CANE (CONTROL) ORDINANCE

56. Two cases of breach of Sale of Cane (Control) Ordinance were reported to the police and prosecutions were instituted.

57. The number of planters who failed to enter into contract before the 30th of June totalled 510 compared with 455 last year.

CANE VARIETIES

58. During the year under review the varieties approved for planting were the following: M 134/32 (together with its white and striped sports), M 112/34; Ebene 1/37, B.H. 10/12, B 3337, B 37161, B 37172, M 147/44, B 34104, M 31/45, M 202/45 and M 93/48. Another variety M 253/48 was also authorised, but its planting was made conditional on a permit delivered by the Central Board and was restricted to sub-humid irrigated areas only.

CONTROL OF CANE WEIGHBRIDGES

59. The number of cane weighbridges in operation in 1961 was 128 compared with 129 in 1960; one having been closed down and one displaced with the Board's approval. Of this total, 115 weighbridges were found to be

accurate on first examination, 11 on second examination and the remaining two on third examination. On the request of the owner, a weighbridge was checked during the crop and found to be accurate.

SURPRISE CHECKS CARRIED OUT OF WEIGHBRIDGES DURING THE CROP

60. During the crop, 333 surprise checks were carried out and 277 vehicles were reweighed (88 carts and 189 lorries). In 3 cases, the weights were found to be inaccurate; one weigher was prosecuted and warnings issued to the other two.

VIII. The Sugar Industry

CROP RESULTS

61. The total area under cane was 200,000 arpents of which, 186,410 arpents were reaped compared with 201,610 arpents and 188,360 arpents respectively for 1960. Climatic conditions were somewhat abnormal in that during the growing period rainfall was below normal while it was greater than usual in the first few months of the maturation period. This, coupled with the fact that temperatures were generally greater than normal throughout the year, resulted in the overall production of more cane than in 1959 but reduced the sucrose content at harvest with the result that sugar production fell to 552,800 metric tons, about 26,400 tons less than in 1959. The yield of sugar per arpent was 2.97 metric tons whilst in 1959 it was 3.17 metric tons. The average crushing rate was 92.8 metric tons per hour compared with 87.7 in 1959 and the average daily crushing rate was 1,750 tons compared with 1,797 in 1959.

CANE VARIETIES

62. In order of importance, the main varieties making up the 1961 crop were the following: Ebene 1/37, M 147/44 and M 134/32. The above mentioned varieties accounted for about 65 per cent of the crop and the remaining 35 per cent were made up of B 37172, B 3337, M 31/45, M 202/46, B 34104 and other varieties.

QUOTAS AND PRICES

63. The negotiated price quota for the calendar year 1961 under the Commonwealth Sugar Agreement was 351,750 long tons and the negotiated price £45.2.0d per ton an increase of 13/2 per ton compared with the 1960 price. In view of the disastrous 1960 crop, Mauritius was allowed to supply out of the 1961 sugar production the shortfall on its 1960 negotiated price quota with the result that sugar exports for 1961 at the negotiated price amounted to 402,435 long tons. In 1961, 504,265 long tons of sugar were exported and local consumption accounted for 26,700 long tons.

SUGAR EXPORTS

64. The exports of sugar were as follows:—

			<i>long tons</i>
United Kingdom	...	...	402,435
Canada	...	...	101,830
TOTAL	...	...	504,265

MOLASSES AND ALCOHOL

65. The production of molasses amounted to 138,000 metric tons of which 64,633 were exported; about 8,000 metric tons were used in the manufacture of rum and various other alcoholic products and the balance as fertilizer. The total production of alcohol reduced to 100° G.L. was about 1,350,000 litres, the greater part of it being used locally as rum, denatured spirit, power alcohol and in the manufacture of vinegar. 14,781 litres were exported.

THE MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE

66. The Institute provides the research services for the industry and undertakes extension work amongst the large farmers. The Department of Agriculture is responsible for extension work amongst small cane farmers. Close liaison is essential between the staff of both organisations if the small cane farmer is to obtain the full benefit of the research findings of the Institute. The work of the Institute is fully recorded in its annual report.

IX. Tea Industry

TEA CONTROL BOARD

67. The Tea Control Board—established in the preceding year under the provisions of the Tea Industry Control Ordinance—continued to operate under the chairmanship of the Director of Agriculture and twelve meetings were held. A Tea Control Board Office was set up at Réduit and a small executive staff appointed.

LEGISLATION

68. The Tea Industry Control Regulations, 1961—published as Government Notice No. 36 of 1961—were enacted in July 1961. These regulations modified the system of control of green leaf prices to planters.

STATISTICAL

69. Quarterly and annual statistical bulletins were issued by the Board. A new system of registration and licensing of tea properties was put into effect. An Agro-Economic survey of tea plantations of all sizes was commenced by the Board in co-operation with the Tea Division of the Department of Agriculture.

GENERAL

70. The Board devoted its attention to the following aspects of tea development, most of which were still under active consideration at the end of the year:—

- (a) A form of insurance against cyclone damage;
- (b) Centralised local marketing of black tea;
- (c) Rents chargeable to project tea planters on Crown Land leaseholds;
- (d) Establishment of new villages as sources of labour in tea development areas;
- (e) Income tax concessions applicable to tea plantation development;
- (f) Publicity and propaganda;
- (g) Credit facilities for tea project planters;
- (h) The marketing of green leaf;
- (i) Standardised forms of accounting on tea properties.

MANAGING AGENCY

71. The Nuwara Eliya Tea Estate Company (Mauritius) Limited continued to operate as Managing Agents in respect of the 560-acre Midlands Tea Estate and "Chartreuse" Tea Factory. The factory recommenced operating in January, after completion of repairs following the 1960 cyclones. Teas produced during the year have been of a satisfactory standard and have all been consigned to the London Auctions.

72. Midlands Tea Estate gave satisfactory yields from the mature fields during the year; the work of rehabilitating the areas of young tea damaged by the 1960 cyclones progressed satisfactorily.

CLIMATIC

73. The year was notable for a very dry summer; only 23 inches of rain being recorded for the first three months of the year compared with over 80 inches in 1960. This rainfall was evenly distributed and this, coupled with the prevailing warmth, resulted in a fair crop. The dry warm weather continued well into May and it was not until late June that the normal cold damp winter commenced. The cold weather continued later than usual and was followed by a short dry spell in November. The summer rains with warm weather did not recommence until December, which was a particularly wet month; over 66 inches of rain being recorded at the Tea Experiment Station. The year ended with Cyclone *Beryl* when over 34 inches of rain fell in three days. Apart from damaging the flush on the bushes this cyclone did no extensive damage to either mature or young tea plantations. However, it did destroy the seed crop in the seed gardens.

TEA FACTORIES

74. A new factory, the seventh on the island, has been built at Mare Anguilles in the South-West of the island and is designed for the production of "Legg cut" teas. Its first invoices have already been sold through the London Auctions under the mark "Stili". The other six factories continued normal production throughout the year; none suffered material damage from cyclone *Beryl*, but two suffered some loss of made tea by flooding.

MAURITIAN TEAS

75. 13,225 chests of tea were offered for sale on the London Auctions more than double the previous record of 5,289 chests offered in 1959. This tea sold for an average price of 4s.0.65d per lb, an increase of nearly 2d a lb over the average of 3s. 10.80d per lb realised last year on 4,345 chests. This increase in the average selling price is particularly gratifying, as the world average selling price on the London auctions namely 4s. 5.16d per lb was a little more than 2d below last year's price of 4s. 7.4d per lb. Sales on the Nairobi market were again small, only one invoice of 6,624 lbs being offered for sale at this centre. The sale of tea for export by private treaty continued.

DEVELOPMENT PROJECT

76. The tea development project, which was started in 1956 in the form of a Government-sponsored pilot scheme, designed to put 3,000 acres of new land under tea by the middle of 1962, together with proportionate manufac-

turing capacity, has been extended for one year to allow for the setback caused by cyclone *Carol* in 1960. Most of the land employed for this expansion consists of Crown Land leased in varying sized blocks to selected applicants, who are assisted in many ways in the establishment of their holdings. By the end of the year, it was estimated that approximately 1,700 acres of new land had been opened up and planted.

77. This project suffered severely from the cyclones of 1960; some 30 per cent or more of all the areas previously planted were destroyed. 1961 has therefore been devoted by project planters to a programme of rehabilitation and very little new land has been cleared.

78. To assist project planters in the rehabilitation of their holdings, Government provided for the stabilisation of all main drainage courses in the area, made provision for plants to be supplied free to project planters to replace those destroyed and for the payment of cash rehabilitation subsidies. All main drainage lines have been successfully treated, some 750,000 tea plants have been planted and the cash subsidies paid.

79. Of the 400 acres of Crown Land being developed under this project by Government for subsequent distribution on lease to smallholders when the tea is fully established, a total area of 300 acres had been cleared and planted by the end of the year.

NEW DEVELOPMENT PROJECT

80. In October, work was started on a new development project which is designed to run concurrently with the old. This new project has as its target the planting of a further 2,500 acres of tea by the middle of 1965. All the development work on this new scheme is being carried out by Government with a view to leasing the areas when they are fully established under tea. By the end of the year some 250 acres had been contour-surveyed and the clearing of 130 acres had commenced.

TEA SEED

81. Some 5,000 pounds of first grade tea seed of approved types were imported by air from East and Central Africa. Only 3,000 pounds were harvested from local seed bearers as most of the blossom on the trees at the time of the 1960 cyclones was destroyed. Cyclone *Beryl* in December 1961 has again destroyed the greater part of the seed crop due to be harvested early in 1962. Up to the advent of cyclone *Beryl* all tea seed gardens were recovering well from the effects of the 1960 cyclones. They have suffered more severely than tea in bearing from this latest cyclone owing to the height of the seed bearers.

TEA EXPERIMENTAL STATION — WOOTON

82. The Wooton Station—with an area of 70 acres now in bearing—yielded 295,914 pounds of green leaf for the crop year 1960-61 (July to June): an increase of some 30,000 pounds over the best previous year 1958-59.

83. The vegetative propagation of tea, which suffered a severe setback due to cyclones last year, has now been recommenced. Considerable work on testing parent bushes for yield potential and quality of made tea has been undertaken. Some useful information has been obtained on the suitability of various mediums for rooting tea cuttings in the mist propagator.

84. The number of tea plantations in Mauritius was as follows:—

TEA PLANTATIONS IN MAURITIUS—1961

Total number of plantations		...	...	...	321
Aggregate area		...	...	...	3,819.88 arpents
Area of mature plantations		...	...	...	2,445.55 do
<i>Extent Arpents</i>		<i>Aggregate Area Arpents</i>	<i>% of total area</i>	<i>No. of plantations</i>	<i>Average size Arpents</i>
0 to under 5	Arpents ...	452.56	11.85	277	1.63
5 to under 25	do ...	198.00	5.18	20	9.90
25 to under 100	do ...	978.14	25.61	17	57.54
100 and over	do ...	2,191.18	57.36	7	313.03
TOTAL AREA		...	3,819.88	100.00	321

The largest plantation under single management has 837.17 arpents; the second largest, 539.00 arpents. There are at present 62 plantations of less than 1 arpent.

85. Mauritius produced 2,809,034 pounds of black tea in the year 1961. The output per factory for the last five years in pounds has been:—

<i>Factory</i>	<i>Year</i>				
	1957	1958	1959	1960	1961
Bois Chéri ...	906,248	651,560	654,545	563,408	959,233
La Flora ...	424,381	580,313	502,258	527,050	689,829
Usine Corson ...	327,740	309,086	332,523	282,040	426,365
Pont Colville ...	150,273	174,079	128,374	116,141	235,423
Nouvelle France ...	85,110	209,620	268,582	188,127	208,310
Chartreuse ...	—	—	110,821	56,109	230,215
M. Anguilles ...	—	—	—	—	59,650
TOTAL ...	1,893,752	1,924,958	1,997,103	1,732,875	2,809,034

86. The total exports to all destinations were 1,746,713 pounds and compare with previous years as under:—

<i>Destination</i>	<i>Year</i>				
	1957	1958	1959	1960	1961
	<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb</i>
United Kingdom ...	914,690	712,318	851,596	445,949	1,732,201
South Africa ...	48,217	28,572	112,832	10,505	2,442
New Zealand and Australia	8	25,052	—	—	429
Other Commonwealth Countries	450	499	—	—	11,432
Madagascar and Reunion ...	2,543	1,258	3,471	2,156	209
Western Europe ...	3,306	6,292	42,171	5,920	—
U. S. America ...	—	—	49,401	—	—
TOTAL EXPORTS ...	969,214	773,991	1,023,471	464,530	1,746,713

87. Imports of tea were as follows:—

Country	Year				
	1957 <i>lb</i>	1958 <i>lb</i>	1959 <i>lb</i>	1960 <i>lb</i>	1961 <i>lb</i>
China	3,115	4,580	6,163	7,781	7,324
Hong Kong	4,475	4,358	4,229	2,891	2,984
Ceylon	11,665	3,122	8,050	8,507	9,043
Other Countries	156	99	22	297	1,567
India	—	—	3,740	744	478
TOTAL IMPORTS	19,411	12,159	22,204	20,220	21,396

X. Tobacco Industry

88. Production of cured tobacco was limited to the estimated requirements of local cigarette manufacturers, the British-American Tobacco Co. (M'tius) Ltd. and the Amalgamated Tobacco Corporation (M'tius) Ltd. The industry is controlled by a Board which publishes annually a full report on the industry.

CROP CONDITIONS

89. Virginian varieties planted at the beginning of the year made exceptional growth but, owing to heavy rains and to severe attacks of "Frogeye" and "Root Knot Eelworm" at harvest, the quality of the tobacco produced was of lower quality than in previous years. Many producers opted to destroy part of their plantations and to replant the acreage so destroyed in the second half of the year.

Both flue and air-cured Amarello yielded well, but the crop suffered from adverse weather conditions so that the return per arpent of both flue and air-cured was lower than in previous years.

Strains of Burley 11A and 11B were tried by growers. The yield from the two strains was satisfactory and further trials on a larger scale will be carried out.

Virginian varieties planted in the second half of the year were very promising being almost free from diseases. Unfortunately part of the crop was destroyed by cyclone *Beryl* of the 24th—25th December.

90. "Frogeye spot" was prominent on all plantations during the months of April to June. In fact, this was the most severe attack of this disease ever recorded. The Virginian varieties were more severely attacked than Amarello.

Rootknot Nematodes were more prominent than in previous years even in land planted for the first time to tobacco following sugar-cane. A recurrence of root diseases on Amarello was again observed in the same localities.

Mosaic was reported from all areas, some plantations being severely attacked at the end of the growing period.

91. Insect pests were much in evidence on the crop during the months of October and November.

ISSUE OF PERMITS

92. The following table compares the issue of permits in 1961, with that of the previous year:—

		1960		1961	
		<i>Arpents</i>	<i>Kilos</i>	<i>Arpents</i>	<i>Kilos</i>
Flue-cured Virginian	...	699.63	250,000	567.09	226,000
Flue-cured Amarello	...	127.02	120,000	111.26	108,000
Air cured Amarello	...	134.73	115,000	138.83	115,000
TOTAL	...	961.38	485,000	817.18	449,000

Permits for a smaller acreage were issued in 1961 owing to a decrease in consumption of domestic leaf resulting in an accumulation of stocks following the revision of Customs and Excise duties on the 12th April, 1960.

PRODUCTION

93. The actual production is shown below in comparison with the 1960 figures:—

		1960		1961	
		<i>Arpents</i>	<i>Kilos</i>	<i>Arpents</i>	<i>Kilos</i>
Flue-cured Virginian	...	672	264,480	556	233,132
Flue-cured Amarello	...	127	122,628	109	105,265
Air-cured Amarello	...	132	166,165	136.91	165,271
Burley	...	—	—	.89	701
TOTAL	...	931	553,273	802.80	504,369

YIELDS AND RETURNS

94. The yield of leaf and the financial return to growers were lower than in 1960 due to crop conditions although prices remained unaltered.

		<i>Average yield per arpent</i>	
		1960	1961
		<i>Kgs.</i>	<i>Kgs.</i>
Flue-cured Virginian	...	393	419
Flue-cured Amarello	...	967	965
Air-cured Amarello	...	1,258	1,207
Burley	...	—	788
		<i>Average return per arpent</i>	
		1960	1961
		<i>Rs</i>	<i>Rs</i>
Flue-cured Virginian	...	2,760	2,417
Flue-cured Amarello	...	5,686	4,752
Air-cured Amarello	...	3,222	2,928
Burley	...	—	2,026
		<i>Average value per kilo</i>	
		1960	1961
		<i>Rs</i>	<i>Rs</i>
Flue-cured Virginian	...	7.01	5.76
Flue-cured Amarello	...	5.88	4.92
Air-cured Amarello	...	2.56	2.42
Burley	...	—	2.57

QUALITY

95. The quality of the tobacco produced was lower than in previous years due mainly to unfavourable climatic conditions.

				Percentage of Bright and Medium Grades				
				1957	1958	1959	1960	1961
Flue-cured	...	...	...	73	78	75	85	70
Air-cured	...	...	...	21	25	10	34	23

LOCAL MANUFACTURE

96. The manufacturers' purchases and usings of domestic and imported leaf were as follows:—

1961 Purchases		Kilos Domestic	Kilos Imported	Kilos Total	% Total Imported	C.I.F. Value per Kilo	
						Imported Rs	Domestic Rs
B.A.T. Co. (M'tius)	...	480,288	—	—	—	—	5:85
A. T. Corp.	...	22,402	112,534	—	18.2	9:47	4:79
TOTAL	...	502,690	112,534	615,224	17.5	9:47	5:80
<i>1961 Usings</i>							
B.A.T. Co. (M'tius)	...	412,645	109,225	521,870	20.9	—	—
A. T. Corp.	...	17,117	32,008	49,125	65.1	—	—
TOTAL	...	429,762	141,233	570,995	24.9	—	—
<i>1960</i>							
Purchases	...	532,735	151,044	683,779	22.1	10.04	6.28
Usings	...	459,763	145,053	604,816	23.9	—	—

97. The percentage of imported leaf used in the manufacture of cigarettes has continued to increase as shown by the following figures:—

Year	1957	1958	1959	1960	1961
% Imported	18.8	15.8	18.6	23.9	24.9

98. These figures show the adverse impact of the revised rates of Customs and Excise duties in force since the 12th April, 1960. The average C.I.F. value of Rs 9:47 per kilo for imported Virginian leaf compares with Rs 7:03 per kilo for domestic Virginian. The average value of Amarello flue and air-cured purchased by the manufacturers were Rs 6:83 and Rs 3:42 per kilo respectively.

99. Domestic Virginian blended with imported leaf is used in the manufacture of "Embassy", "Soirée", "Domino" and "Cabaret" cigarettes which sell in competition with local cigarettes manufactured entirely from imported leaf, namely "Matinée" and "Mills" and imported Virginian cigarettes. Amarello leaf and some of the lower grades of domestic Virginian are utilised for the cheaper brands of cigarettes selling below the price range of imported cigarettes.

IMPORTS

100. Imports of unmanufactured leaf and cigarettes for the last two years are tabulated below:—

		1960		1961	
		Kilos	Value	Kilos	Value
Cigarettes	... ..	20,205	418,721	20,017	412,297
Leaf :—					
Rhodesia	... ..	57,644	520,592	44,466	388,098
U. S. A.	... ..	90,780	981,806	67,068	671,767
India	... ..	2,195	12,231	1,000	5,692
Other Sources	... ..	425	2,347	—	—
TOTAL LEAF	... ..	151,044	1,516,976	112,534	1,065,557
GRAND TOTAL	... ..	171,249	1,935,797	132,551	1,477,854

101. Usings of domestic leaf have decreased by Kilos 30,001.4 compared with 1960, while usings of imported leaf have decreased by only Kilos 3,819.6 during the same period. The percentage decrease in usings of domestic leaf and imported leaf being 6.5 and 2.6 respectively.

WAREHOUSE

102. A concrete building of about 12,000 square feet in area with a slab roof has been constructed at a cost of Rs 225,600 for the storage of baled tobacco. This enlargement of the storage capacity of the Board will allow the segregation of crops in store and the systematic cleaning and disinfection of stores.

XI. Fibre Industry

PRICES

103. The average price paid for aloe fibre in 1961 was Rs 1,200 per ton, compared with Rs 1,050 per ton in 1960. The increase was occasioned mainly by labour costs and represents the producers cost plus a profit of 10 per cent of direct costs. The price paid for fibre was an average price but it was agreed with producers that they would endeavour to supply 60 per cent of the two top grades to facilitate factory operations and reduce a somewhat high industrial loss. There was no improvement in the supply of fibre and the Sack Factory could not meet its contractual obligations for 6×8 pure aloe sacks:—

<i>Average Prices of Fibre per Metric Ton (All Grades)</i>				
1955	1956	1957-59	1960	1961
Rs	Rs	Rs	Rs	Rs
1,001	820	834	1,050	1,200

104. Supplies of aloe fibre were insufficient to meet the requirements of the factory and jute cuttings and "Hearts" had to be imported to meet the shortfall. In 1961, the cost of both jute cuttings and "Hearts" were respectively Rs 1,278.48 and Rs 1,681.33 per ton compared with Rs 677.28 and Rs 1,055.92 in 1960. 367 tons of jute were purchased.

105. The increase in the cost of raw jute was reflected by an increase in the price paid by the Sugar Millers for aloe and aloe-jute sacks supplied and which were as follows compared with 1960:—

				1960	1961
				Rs c	Rs c
Sacks (6×8) Aloe	...	...	...	1.35	2.207
Sacks (5×8) Aloe-jute	...	...	...	1.35	1.207
Sacks (5×7) Aloe-jute	...	...	...	1.10	1.795

Towards the end of the year, the price of raw jute had fallen considerably which indicates that the prices that will be paid for locally manufactured sacks next year will again fall.

FIBRE PRODUCTION

106. Comparative statistics in connection with production are tabulated below:—

				1958	1959	1960	1961
No. of factories operating	...	...	...	21	20	17	12
Fibre produced (tons)	...	...	...	1,576	1,465	1,150	1,111
Value (rupees)	...	...	...	1,553,000	1,403,000	1,018,000	1,333,204
Area under Aloe (arpents):—							
(Wild)	...	...	...	6,101	6,354	6,155	6,735
(Plantations)	...	...	...	839	888	585	573

The Government Sack Factory was the sole purchaser of all fibre produced.

SACK FACTORY

107. This organisation is controlled by a Board which publishes annually a full report on its activities.

108. The production of the factory in 1961 can be summarized as follows:—

				1960	1961
Aloe fibre processed (metric tons)	...	...	...	1,155	1,213
Jute processed (metric tons)	...	...	...	361	365
Sacks produced...	...	...	...	1,289,270	1,422,734
Filter cloth (yards)	...	...	...	34,346	8,872
Other fabrics (yards)	...	...	...	18,730	5,840
Yarn and Rope (kilos)...	...	...	...	26,019	26,155

109. Owing to favourable prices received for sacks, the loss for the year only amounted to Rs 69,275.35 compared with a loss of Rs 422,000 in the previous year.

XIII. Livestock

LIVESTOCK BREEDING STATION—PALMAR

111. *Development*.—More than two miles of fencing was completed. 200 acres were strip planted under Pangola grass (*Digitaria decumbens*). 50 acres were planted under Elephant grass (*Pennisetum purpureum*). Five paddocks each of $3\frac{1}{4}$ acres were planted with the following 5 grass species: *Pennisetum Purpureum*, *Panicum maximum* (Sigor), *Panicum coloratum*, *Chloris gayana* (Endebess) and *Chloris gayana* (M'barara) for night grazing, management and other experiments. Repairs to buildings damaged by cyclone Carol in 1960 were completed.

BEEF CATTLE

112. A preliminary assessment of the growth rate of Ongole cattle was made. Boran cattle introduced from Kenya showed promise under local coastal conditions. One Ongole bull and one Boran bull were transferred to Rodrigues to enable trials to be initiated in upgrading herd cattle on the cattle-walk.

GOATS

113. Selection work was begun on Anglo-Nubians and British Alpine goats based on growth rate and milk production. Some Anglo-Nubian bucks were placed at the disposal of goat keepers with a view to upgrading the local goat population.

LIVESTOCK BREEDING STATION—CUREPIPE

Milch Cattle

114. Progeny testing of bulls of the Creole breed continued. Tested bulls were passed to the Division of Veterinary Services for use in the artificial insemination service. 129,388 litres of milk were produced giving an average daily production of 6.35 litres per head, the butter fat averaging 4.2 per cent.

Pigs

115. Selection for increased efficiency in food conversion of large White pigs continued.

Feeding Trials

116. The cost of rearing a calf from birth to 18 weeks on whole milk and calf starter meal was estimated at Rs 350. Reared on reconstituted milk powder at the rate of 1 lb of powder to 1 gallon of water plus calf starter meal the cost is only Rs 160; when reared on equivalent diluted whole milk plus calf starter meal, the cost is also Rs 160, the growth rates remaining satisfactory.

117. Trials using defecation scums (a by-product in raw sugar manufacture) as a source of protein and calcium phosphate have given promising results on milch cows and other classes of stock. Dried defecation scums, which are available in quantity, contain 15 per cent protein, 4 per cent calcium oxide, and 2.5 per cent phosphoric acid (P_2O_5) and are a cheap source of protein and calcium phosphate. Subject to further trials, it would appear that the use of scums in locally manufactured feeds could result in a significant change for the better in milk production.

118. With Rhode Island Red chicks, tallow used as the high energy component in chick feed was found to be more efficient than coconut oil.

ECONOMICS OF LIVESTOCK PRODUCTION

119. Various charts have been prepared submitting the relative importance of the industry in the country's economy and summarising some of the work done to date on various classes of stock.

LIVESTOCK FEED FACTORY

120. Two thousand nine hundred and eighty five tons of livestock feeds were manufactured during the year using the following products: wheat bran, maize, groundnut, cotton seed cake, fish meal, oats, bone meal, cod liver oil, skimmed milk powder, butter milk powder, vitamin: Trelco D3, Trelcovite, T.F.P. Super, molasses, broad beans, nitrofurazone, pollard, lucerne, fish soluble dried, etc. Three thousand and fifty eight tons of feeds were sold.

FORMULATIONS OF FEEDS

121. As at the end of the year, the following feeds were available from the Livestock Feed Factory:—

(a) *Feeds for Milch Cattle*:—

- (i) Cow Feed: protein content 19 per cent sold at Rs 330 per ton;
- (ii) Bull Feed: protein content 22 per cent sold at Rs 400 per ton;
- (iii) Calf Feed: protein content 20 per cent sold at Rs 460 per ton.

(b) *Feeds for Beef Cattle*:—

- (i) Special Cattle Feed sold at Rs 225 per ton;
- (ii) Ureated Molasses sold at Rs 100 per ton;

(c) *Feeds for Pigs*:—

- (i) Pig Grower: protein content 15 per cent sold at Rs 350 per ton;
- (ii) Pig Starter: protein content 18 per cent, sold at Rs 380 per ton;
- (iii) Creep Feed: protein content 21.5 per cent, sold at Rs 500 per ton.

(d) *Feeds for Poultry*:—

- (i) Chick Feed: protein content 20 per cent, sold at Rs 510 per ton;
- (ii) Poultry Feed: protein content 15 per cent, sold at Rs 440 per ton.

(e) *Rabbit Feed*: protein content 18 per cent sold at Rs 380 per ton;

(f) *Other Feeds*:—

- (i) Horse Feed at Rs 400 per ton;
- (ii) Special Horse Feed at Rs 440 per ton;
- (iii) Turkey Chick Feed at Rs 625 per ton;
- (iv) Game Bird Chick Feed at Rs 650 per ton;
- (v) Mineral Mixtures at Rs 860 per ton.

122. The quantities of feeds sold by the Livestock Feed Factory for the years 1956-1961 were as follows:—

			Tons				Tons
1956	...	...	800	1959	...	...	1,350
1957	...	...	885	1960	...	...	2,140
1958	...	...	800	1961	...	...	3,058

XIV. Animal Health

DEPARTMENTAL STATIONS

123. The health of cattle, pigs and goats on Departmental Stations was good on the whole, thus providing optimum condition for successful implementation of the breeding programme. As a result of strict sanitary measures, only five cows went down with summer mastitis. Two young calves died of entero toxæmia; the rest of the young stock remained unaffected.

124. The Large White pigs, imported originally from South Africa and Australia, bred satisfactorily. A few cases of lameness were encountered, mostly among young stock. In some cases of lameness streptococcus of the hæmolytic group was isolated and such animals responded well to treatment with Chloram Phanical and Vitamin B Complex. Other cases, in which no pathogen was isolated, responded immediately to Vitamin B therapy. As the breeding stock is sold to pig breeders all pigs were vaccinated against swine fever and swine erysipelas as a prophylactic measure.

125. The goat population at the Palmar Breeding Station did well during the year save for a few cases of mastitis that were treated satisfactorily. One buck, stationed at the Demonstration Centre at Rivière des Anguilles for breeding purposes, died after ailing for two months. Post mortem examination revealed mesenteric adenitis and hæmorrhagic congestion of the large intestine. Microscopic examinations of the material from the glands and the intestine showed vast numbers of acid-alcohol fast organisms which were identified at the Weybridge Laboratories as *Micobacterium avium*. This condition is rare in goats. No further case has been encountered.

GENERAL

126. Due to strict control of imports and general quarantine measures in the Island, the animal health remained satisfactory throughout the year. Since the establishment of the Animal Health Laboratory, more and more breeders are taking advantage of the diagnostic service. It is possible that some diseases may have existed in the Island but remained undiagnosed through lack of scientific assistance.

127. No case of Swine Fever was reported during the year. At one farm, a case of swine erysipelas was diagnosed and confirmed in the laboratory. The disease appeared to be of a mild form as no further casualties have been reported either at the farm or elsewhere on the Island. Lameness in pigs similar to that encountered at the Livestock Breeding Station, Curepipe, was met with in animals on private farms.

128. During the dry season, the cattle and goat population suffered from severe anaemia which caused many deaths. Treatment with cobalt and copper gave a satisfactory response. It would appear that there is a general deficiency of these trace elements in the fodder.

129. Owing to shortage of professional staff, the annual Tuberculin test was carried out late in the year. Of 715 head of Zebu cattle tested, 9.1 per cent gave a positive reaction. In addition, 413 cows and 13 draft bullocks were tested, 9.6 per cent and 23.1 per cent respectively reacted positively.

130. Newcastle disease occurred in a number of areas among unvaccinated birds but did not assume epizootic form. Cases of Fowl Pox were encountered but the disease was kept under control through vaccination. Lymphomatosis, introduced through imports of large number of day old chicks from overseas, has been a common feature of mortality among growing and adult stock. Sample testing of birds for pullorum disease was carried out with negative results.

131. Canine distemper flared up in the Island with the onset of summer and caused many deaths amongst unvaccinated dogs. One case of Aujeszky's disease was diagnosed in a dog but the disease did not spread.

LABORATORY SERVICES

132. During the year the laboratory accepted 2,257 pathological specimens for examination compared with 1,656 specimens in the previous year. Random samples of blood from draught bullocks in different parts of the Island were collected for examination for Trypanosomiasis with negative results. 102 blood samples from cattle at Departmental Stations were subjected to the agglutination test for Brucellosis with negative results.

133. The Laboratory also produced the following vaccines:—

	<i>Doses</i>
Newcastle Disease (live attenuated virus) ...	405,280
Newcastle Disease (inactivated formalized) ...	76,000
Fowl Pox	118,000
Swine Fever (doses of 10 ml)	1,728
Canine Distemper	10,000
Bovine Wart Vaccine	450

134. Plans for the construction of a new Animal Health Laboratory were finalised and construction was commenced.

135. In addition to mice, guinea pigs, rabbits, poultry and pigs bred specifically for laboratory work, two horses were added to the stock for serum production and for supplies of blood for preparation of culture media. Fort William, which was formerly used solely for quarantine of imported stock, was expanded to provide facilities for experimental work in connection with the laboratory.

EXTENSION SERVICE

136. The policy of upgrading local milch cattle of creole type was vigorously pursued through artificial insemination using selected bulls. 10,667 inseminations were made with an overall conception rate of 66 per cent. In addition, 6,428 cases requiring veterinary aid were attended inclusive of pregnancy assessment, enucleation of ovarian cysts, etc. A vigorous campaign to improve the feeding of milch cattle with concentrates from the Livestock Feed Factory was conducted. The progress achieved was indicated by the increased sales of stock feed compared with 1960.

MEAT INSPECTION SERVICE

137. The six slaughter houses were regularly inspected with a view to improving meat inspection and abattoir hygiene. It is pleasing to record that towards the end of the year a fully qualified Veterinary Surgeon was employed by the Municipality of Port Louis for meat inspection at the Island's main slaughter house at Roche Bois. This appointment made it possible to introduce a system of weekly returns from abattoirs with a view to keeping a check on the animal disease position in local as well as imported animals brought in for slaughter.

138. During the year, 1,863 Creole cows unfit for further breeding, were permitted to be slaughtered on a quota basis. 184 permits for slaughter of milch cattle on humane grounds were issued; the main reason for the issue of permits was accidental injury, while some were allowed slaughter because of rickets, prolapse of the uterus and actinomycosis.

POULTRY BREEDING CENTRE

139. Progeny testing of foundation stock of White Leghorn and Rhode Island Red breeds was successfully completed. The selection was based on the dams' production to 500 days of age and the progeny's past record, the average production of the selected dams being 239 eggs. The stock was housed not only in the breeding pens at Réduit but also at Richelieu and Curepipe.

140. The first sale of day old chicks from tested stock took place on 10th May, 1961, in the presence of the Minister of Agriculture and Natural Resources. During the following seven months, 2,859 day old chicks and 4,499 four weeks old chicks were sold to breeders. On account of demand, the production of first cross (White Leghorn and Australorp) chicks was commenced. During the year, 13,041 chicks were hatched. Both fertility and hatchability were better during the months of May to September.

141. The sales of poultry and poultry products were as follows:—

Day old chicks	...	...	2,859 units
Month old chicks	...	...	4,499 "
Hatching eggs	...	...	12,450 "
Live Powl (Culls)	...	...	6,529½ lbs
Table eggs	...	...	83,681 units

142. Mortality among the growing and adult stock did not exceed 8 per cent and was mainly due to exposure during inclement weather and reproductive disorders. Coccidiosis was chiefly responsible for casualties among chicks but addition of coccidiostat in the feed successfully controlled the disease. The incidence of Lymphomatosis has been brought down to 3 per cent by the culling of susceptible families.

143. The production of breeders averaged 65 per cent over the year with a peak production of 72 per cent during the months of July to September. 137,281 eggs were produced of which 28,862 were incubated, 12,450 were sold to breeders for hatching, 6,696 were supplied to the Animal Health Laboratory for biological products, 5,592 were rejected and 83,681 were sold for table purposes, being mainly pullet eggs.

144. In July 1961, "404" and "606" hybrid strains with their respective parent stock were imported from Messrs. Thombers of Yorkshire to assess their economic value under local conditions. For purposes of teaching and exhibition, exotic breeds of poultry and pheasants were added to the Poultry Centre.

145. Light Sussex day old pullets and cockerels of a table strain were imported from United Kingdom to form the foundation stock for the production of broiler chicks by crossing with Rhode Island Red. Trials to assess the value of broiler feeds were commenced.

146. Plans for an experimental and demonstration unit for the production and packing of broilers was approved and equipment was ordered. 12 pens with runs to house the exhibition breeds were constructed. To meet the growing demand for point of lay pullets, a mongoose proof open range was completed and equipped with shelters and night arcs, rain proof feeders and automatic water drinkers. The range is large enough to accommodate 2,000 birds to point of lay.

ANIMAL QUARANTINE

147. 4,004 head of cattle were received at the Fort George Quarantine Station from Madagascar. Slaughter of these animals was permitted only at the abattoirs at Roche Bois, Rose Hill and Curepipe.

148. Sixteen dogs passed through the quarantine kennels at Réduit.

MISCELLANEOUS

149. During the year, 22 cases of illegal slaughter, 9 cases of suspected poisoning of animals, 3 cases of cruelty and one of disputed ownership were dealt with.

150. Under the Animal Disease Ordinance, control was maintained over the importation of livestock and livestock products. All frozen meat landed was subjected to veterinary inspection prior to release. 566 import permits and 512 landing permits were issued. Fifty-five certificates of veterinary health were issued to cover the sterilisation of drums used in exporting molasses for stock feeding purposes. Twenty certificates of veterinary health were issued in respect of cagebirds, dogs, and cats taken out of the Island. During the chasse season, export of venison was initiated by a group of chasseurs to Réunion. The terms of the covering veterinary certificate of health were negotiated with the Réunion authorities.

OPEN DAY

151. An open day was held on 21st January, 1961, with which was combined the formal opening of the Poultry Centre by the Minister of Agriculture and Natural Resources. The Chief Minister visited the Poultry Centre on 5th October, 1961, accompanied by the Minister of Agriculture and Natural Resources.

XV. Land Settlement

152. During the year, the Land Settlement Committee held three meetings and examined various matters pertaining to conditions of tenure and selection of new tenants.

153. Routine maintenance work on settlements was carried out by tenants; emphasis was laid on the need to protect steeply sloping land against erosion. On the whole, farmers kept their holdings in good condition. On some settlements, a small percentage of the land was abandoned; in a few cases, this was due to neglect but in most cases the cause was the difficult nature of the terrain.

154. Despite the moratorium on the payment of rent, which was granted in the previous year following cyclone *Carol*, rent collection during the year under review was unsatisfactory. With a view to improving collection, the dates of payment of instalments were fixed at times when the settlers can be reasonably expected to have money.

155. The disposal of buildings on all settlements was completed and tenants are now owners of the existing buildings on their respective holdings. Very few tenants reside on their holdings; most of them reside in the nearest village.

156. Work on the extension of the irrigation canal at Terre Rouge was completed. The extension will enable affected farmers to irrigate their holdings and make full use of the water allotted to them. At Richelieu, irrigation water was not supplied throughout the year owing to a shortage of water in the La Ferme reservoir, with the result that the area reserved for foodcrops remained uncultivated. Attempts by some growers to raise a few crops of beans were unsuccessful.

THE VALE

157. This settlement being near the coast, most of the tenants constructed their houses on their holdings and have taken up residence. Weather conditions being unfavourable, most of the tenants have not been able to raise good crops but some have planted sugar-cane.

PALMAR

158. Of the 87 tenants settled during the previous year, three have given up their holdings as they were unable to successfully crop the land allotted to them.

BÉE MANIQUE

159. Sixty-two holdings have now been leased. The area reserved for production of storable foodstuffs together with the demonstration plot of four acres was also leased to farmers. Elephant grass established on the steeper slopes, has prevented soil erosion. There was no demand for planting material and, as there is no fodder problem in the locality, very little of this grass was used.

PLAISANCE

160. One hundred and twenty-three holdings were cultivated by tenants under foodcrops and vegetables.

RELIEF ALLOTMENTS

161. Nine sections of the relief allotments remained in operation. The allocation of the land is summarized below:—

<i>Site</i>	<i>No. of Allottees</i>	<i>No. of Huts</i>	<i>Acreage</i>
Curepipe	32	32	35
Malherbes	18	18	18
Barkly Eastern	27	27	27
Barkly Western	33	33	17½
Richelieu	27	27	27
Bois Marchand Eastern ...	20	1	20
Bois Marchand Western ...	14	—	14
Elysée	38	—	38
Moona	6	6	12
TOTAL	215	144	208½

During the year four allottees resigned, one died and one new family was allotted land. No materials for construction and repairs were supplied to allottees.

XVI. Extension Services

VISITS TO PLANTATIONS

162. The main objective of the Extension Service has been the improvement of the methods of crop husbandry of the small growers so as to ensure higher yields. More than 6,000 visits were paid to growers and advice covering all aspects of the various crops grown was given. The importance of timely control of pests and diseases, the use of more suitable and better varieties of crops, fertilization and the application of soil conservation measures were stressed.

DEMONSTRATION WORK

163. Sixty demonstrations were carried out on the proper use of fertilizers in the cultivation of various foodcrops and sugar-cane. There was marked response in most cases and the use of balanced fertilizers was well illustrated as compared with the use of nitrogen alone. 218 demonstrations were conducted on the control of pests and diseases and several on the use of weedicides.

164. Evening meetings were held with farmers throughout the island and talks on agricultural topics were delivered. Several film shows on agricultural topics were given. The main subjects discussed were:—

- (a) The use of complete fertilizers in sugar-cane cultivation;
- (b) The control of pests and diseases;
- (c) Potato cultivation and routine spraying against blight.

PROPAGATION AND DISTRIBUTION OF CANE VARIETIES

165. Twenty-five propagation plots of newly released varieties of sugar-cane were laid out on planters' lands and planted to the following varieties: M 93/48, M 202/46 and M 253/48. The canes obtained from these plots were distributed to small planters.

OCCURRENCE OF PESTS AND DISEASES

166. Bacterial Wilt and Late Blight remained the two major diseases affecting potatoes and tomatoes. On onions, purple blotch was very severe in certain localities and no effective control was achieved despite repeated applications of Zineb. The potato variety C. 53 proved highly susceptible to Bacterial Wilt. Cucumber plantations in the whole island showed leaf deformation and discolouring closely resembling Mosaic.

167. Both *Heliothis armigera* and *Pardalaspis cyanescens* were much less troublesome than in previous years. Applications of D.D.T. and Dipterex respectively gave good control in the field. Late plantations of potatoes were severely attacked in many localities by caterpillars and cutworms. In certain cases whole plantations were lost and in other cases yields were considerably reduced. The attack was so sudden that control measures could not be applied in time everywhere.

FOODCROP GROWING IN INTERROWS OF CANE

168. There has been a marked increase in the amount of foodcrops grown in the interrows of sugar-cane especially on estates. The Chamber of Agriculture reported that maize, potatoes, groundnuts and beans were the main crops planted in cane interlines on sugar estates' lands and such plantings amounted to not less than 1,928 arpents.

PERMANENT DISTRICT DEMONSTRATION PLOTS

169. *Arsenal Demonstration Plot*.—9,384 kgs of foodstuffs were produced. 12,217 canes of the variety M 253/48 were distributed to planters. 8,580 kgs of cane produced in excess of the requirements of planters were sent for crushing to Beau Plan Sugar Factory.

170. *Mapou Demonstration Plot*.—5,733 kgs of vegetables were produced and 3,770 canes of the variety M 253/48 were sold. The dry conditions prevailing during the first three months of 1961 hampered cropping. The Anglo Nubian buck kept at the Station served seven she-goats during the year. Vegetable seeds and fruit trees from Barkly Experiment Station were on sale but sales were slow save for beans.

171. *Vacoas Demonstration Plot*.—Vegetables and foodcrops were cultivated and 15,594 kilos were produced.

172. *Rivière des Anguilles Demonstration Plot*.—9,862 kilos of foodstuffs and vegetables were produced and 6,409 canes of the varieties M 253/48, M 93/48 and M 202/46 were sold to various planters.

The Anglo Nubian buck kept at the Station served three she-goats during the year. A cow was also kept at the station in a demonstration cowshed. Throughout the year, vegetable seeds and fruit trees from Barkly Experiment Station were on sale but sales were small save for beans.

173. *Central Flacq Demonstration Plot*.—10,000 kgs. of foodstuffs and vegetables were produced during the year and 7,750 canes of the variety M 93/48 were sold. A demonstration cowshed, a goat pen and chicken run were constructed and a silage pit was dug and its use demonstrated.

174. *Plaisance Demonstration Plot*.—9,383 kilos of foodstuffs and vegetables were produced and 5,485 canes of the M 253/48 variety were sold. A demonstration cowshed, goat pen and chicken run were constructed and the fencing of the Station was completed. A silage pit was dug and filled.

175. The cropping programme of the demonstration plots was altered to enable the Extension Service to provide planting material of foodcrops and grasses to planters. This has resulted in the planting of larger areas to manioc, bananas, sweet potatoes, groundnuts, acacia and a few of the newly introduced grass varieties.

AGRICULTURAL TEACHING IN PRIMARY SCHOOLS

176. Very few schools have restarted gardening after the cyclones of 1960. Seeds, fertilizers, insecticides and fungicides have been distributed to 23 schools and regular visits were paid to these school gardens.

CONTROL OF SOIL EROSION

177. Contour planting is steadily gaining ground. Demonstrations carried out by the Extension Service have shown that on steep land crops planted on the contour suffer little erosion, whereas plantations not on the contour are severely eroded after heavy rain. Some 37 arpents were contour staked for planters.

RADIO TALKS

178. The following broadcast talks were given by Officers of the Department during the year:—

No. 1.	The Sugarcane Millers and Planters Central Arbitration and Control Board	S. STAUB, <i>Deputy Director of Agriculture.</i>
No. 2.	Le rôle du service de l'Agriculture dans l'Industrie du Tabac	L. SUZOR, <i>Agronomist.</i>
No. 3.	La défense de nos cultures	A. ORIAN, <i>Entomologist.</i>
No. 4.	Le développement du thé à Maurice	J. DEANE, <i>Tea Officer.</i>
No. 5.	La lutte contre les maladies de la pomme de terre ...	L. ORIEUX, <i>Plant Pathologist.</i>
No. 6.	Causerie sur l'élevage du lapin	C. DELAITRE, <i>Animal Husbandry Officer.</i>

No. 7.	La Propagation des arbres fruitiers et décoratifs	...	J. H. JULIEN, <i>Horticulturist.</i>
No. 8.	Les Insecticides	... ..	A ORIAN, <i>Entomologist.</i>
No. 9.	La Production du Silage à Maurice	... ..	S. MOUTIA, <i>Agronomist.</i>
No. 10.	La maladie de la Pomme d'amour et de la Tomate et leur Traitement		L. ORIEUX, <i>Plant Pathologist.</i>
No. 11.	D'autres Travaux sur l'Ensilage	... ..	B. ROY, <i>Senior Agricultural Officer.</i>
No. 12.	L'Enseignement pour l'obtention des diplomes d'Agriculture et de Technologie Sucrière au College d'Agriculture		A. NORTH COOMBS, <i>Principal College of Agriculture.</i>

GARDENING CALENDAR

179. The gardening calendar, first published in 1959, has been entirely revised, rearranged and brought up to date.

LOCAL PRODUCTION OF STORABLE FOODSTUFFS

180. Bananas were planted at Bée Manique on the whole area devoted to the production of storable foodstuffs. $3\frac{1}{2}$ arpents of sweet potatoes and 20,000 holes of eddoes were interplanted in the banana plantation. The station at Bée Manique was closed on the 25th July, 1961, and the land allotted to tenants in lots of 2 acres. 15,065 kilos of foodstuffs were produced and 70,286 kilos of sugar-cane were harvested.

181. The drought prevailing during the first quarter of the year hampered the cropping programme at Plaisance. A few budded orange plants were planted to form the nucleus of an experimental citrus orchard. 38,540 kilos of foodstuffs were produced and the sugar-cane as a windbreak yielded 26,950 kilos.

MISCELLANEOUS ACTIVITIES

182. Foodcrop production was encouraged especially by the launching of the "Produce More Food Campaign" whereby villagers were encouraged to grow fruit trees, to cultivate a kitchen garden and to keep chickens and other small livestock for their own household requirements. The campaign was commenced at the end of March at eight selected villages distributed throughout the Island namely Morcellement St. André, Belle Vue Maurel, Brisée Verdière, St. Pierre, Stanley, Bambous, Mare d'Albert and Bois Chéri. The results were encouraging in that at the selected villages about a thousand fruit trees have been planted and 400 pure bred chicks sold to villagers. Planting materials of sweet potatoes, manioc, pigeon peas, acacia and elephant grass have also been distributed.

183. With the active encouragement of the Mauritius Chamber of Agriculture, sugar estates and sugar-cane planters have participated in the "Produce More Food Campaign" with considerable effect. Sugar estates with factories cultivated directly 770 arpents under foodcrops while a further 2,490 arpents of estate land was cultivated by tenants or by employees of the estate on a rent-free basis. Of this total acreage of 3,260 arpents, 1,332 arpents were

totally cultivated in foodcrops, mainly maize, potatoes, groundnuts and beans while on 1,928 arpents the interlines of cane were planted. 34 large planters co-operated in the scheme, information from 13 of these indicated that 71 arpents were cultivated by the owners and 191 arpents cultivated by tenants or by employees on a rent-free basis.

184. The value of pit silage to cowkeepers was demonstrated by the construction and filling of twelve pit silos in villages where there is often a shortage of fodder at certain times of the year.

185. Under the new potato spraying scheme, some 130 arpents of potato plantations were sprayed as a preventive measure against blight and to demonstrate to growers the value of regular and timely spraying for disease control.

186. Various surveys were conducted including:—

- (a) The assessment of Crown Lands for rental value and suitability for agricultural purposes;
- (b) the assessment of lands put at the disposal of the Ministry by estates and planters for foodcrop production;
- (c) the assessment of damage done to plantations by floods, weedicides and cyclone;
- (d) the assessment of compensation to be given to allottees of Crown Lands taken over by the Ministry of Housing, Lands and Town and Country Planning;
- (e) the investigation of fodder problems in certain regions of the Island;
- (f) the collection of information as to the acreage under bananas;
- (g) the submission of weekly returns of market prices and monthly returns of acreage of foodcrops under harvest.

XVII. Experiment Stations

CUREPIPE EXPERIMENT STATION

Development

187. Three acres of marshy land were cleared during the early part of the year; the existing drains were deepened and cleared and 1,320 feet of access roads were built. Five acres of land at the Livestock Breeding Station, Curepipe, were cleared, ploughed and planted to fodder species to obtain data on comparative yield, management and fertilizer requirements. One goose house measuring 22'6" × 9'6" was rebuilt and made dogproof. A compost shed, 36' × 11' was constructed.

188. The three pit silos and the trench silo constructed at the Livestock Breeding Station were filled with cane tops in August 1960 and opened in February, 1961, refilled in May and opened in August, 1961. In all cases wastage was high owing to the entrance of water. It is evident that in this zone of high rainfall and high water table, as much attention has to be paid to the floor of the silo as to the walls and that an effective roof is essential.

Fodder

189. The fertilizer experiments with different levels of nitrogen in the form of sulphate of ammonia, commenced last year on *Setaria sphacelata*, Bua River strain were continued. On established setaria, once again application of 150 pounds per acre of sulphate of ammonia after each cut gave a significant increase in yield compared with 50 pounds per acre; but there has again been no significant difference between an application after each cut of 100 lb per acre and 150 lb per acre of sulphate of ammonia. Three levels of phosphate in the form of single superphosphate, potash in the form of sulphate of potash and lime in the form of slaked lime have not shown any significant differences in yields.

190. The new method of planting setaria has given better results in that the grass planted at a spacing of $1' \times 1\frac{1}{2}'$ covered the ground more quickly, the weed population was consequently very low and the yield of fodder was reasonably high.

191. Among the various grasses tried since 1959-60, it is now evident that the following species are good yielders in the super-humid areas:—

- (a) Kikuyu grass—*Pennisetum clandestinum*
- (b) Rhodes grass—*Chloris gayana*, the “Mbarara” and “Endebess” strains
- (c) Guinea grass—*Panicum maximum*, “Sigor” strain
- (d) The two species of Pangola grass, *Digitaria pentzii* from South Africa and *Digitaria decumbens* from the West Indies.

From small unreplicated observation plots the following yield in Kgs/acre were obtained in one year, i.e. from June 1960 to May 1961:—

Grass	Yield in Kgs/acre	No. of cuts taken in the year
(a) Kikuyu	44,235	7
(b) Rhodes “Mbarara” strain	56,505	8
(c) Rhodes “Endebess” strain	48,347	8
(d) Guinea grass, “Sigor” strain	67,788	8
(e) <i>Digitaria pentzii</i>	34,870	6
(f) <i>Digitaria decumbens</i>	45,091	6
(g) <i>Setaria sphacelata</i> “Bua River” strain ...	47,666	5

192. Elephant grass *Pennisetum purpureum*, together with *Chloris gayana* “Endebess” strain and *Setaria sphacelata* “Bua River” strain were planted in August for yield comparisons. Setaria is a heavy yielder in summer but in winter the growth is considerably reduced compared with the two strains of Rhodes grass and the strain of Kikuyu grass that was introduced many years ago on the station, discarded, survived and put back into cultivation in 1959. Close observation of the fields of Setaria in winter indicated that a few stools of this grass continued to grow well and kept their colour. These stools were collected and transplanted into one field in August for observation with a view to possible selection for winter growth.

193. Fodder supplies to the Livestock Breeding station were maintained and the Station at Palmar was also supplied with fodder during the early part of the year on account of drought. Over 300 tons of cane tops have been ensiled.

194. Trials to test the effect on grass of phosphate in its different forms and also to test the various species of grass for grazing and mowing were laid down. Trials with *Canna edulis* as fodder were recommenced as in emergencies, a large bulk for soilage feeding can be cut in a short time. The imported forage legumes planted in 1960 failed to show any promise. The night grazing trials were discontinued in May and will be resumed in 1962.

Orchard Crops

195. The citrus orchards established in 1957 and 1958 and which were damaged by cyclones in 1960 were recovering. One Fagan mandarin produced a few fruits of good quality. 75 seedlings of Java grapefruit were planted along river banks, and a Valencia orange was planted in the orchard. The plots of banana, kaki and guava have progressed. Additional guava seedlings were planted. Cuttings of two varieties of Raspberry, "Malling Jewel" and "Norfolk Giant," were received from the United Kingdom and planted in December.

Foodcrops

196. Experiments as to "time of planting" of foodcrops and vegetables has again demonstrated that crops planted over the period June to September will yield better than plantings made at other times of the year. However, a few vegetable crops like cabbage and cauliflower gave economic returns from November 1960 to March 1961. In a potato variety trial, seed produced and stored at the Station in December 1960 were planted in late May and harvested in August; freshly imported seed of the variety King George was used as the standard.

Mean Yield of Potatoes in Kilos per acre:—

Variety					Kilos
Pimpernel	...	...	...	...	6,715.50
King George (Imported)	...	...	...	...	3,620.92
Sebago	...	...	...	...	2,709.80
Sequoia	...	...	...	...	2,631.75
King George (Curepipe)	...	...	...	...	1,867.64
Saranac	...	...	...	...	1,368.51

L.S.D. { P = 0.05 = 800.79 Kg/acre
 { P = 0.01 = 1107.42 Kg/acre

The variety Pimpernel was outstanding. It was also the only variety untouched by pests and diseases in the trial.

197. Potatoes were successfully stored for 4 months (September to January) on wire netting trays and in pits under a thatched roof. Potato fertilizer, variety and spacing trials, were completely destroyed by cyclone *Beryl* in December. Selection work on maize for 3 cobbled plants was continued. Arouilles, ginger, garlic, groundnuts and pineapples were also grown.

LIVESTOCK

198. The flocks of duck and geese were maintained and a number of birds and eggs were sold to the public. The peacocks and black swans appeared to thrive.

REDUIT EXPERIMENT STATION

Development

199. A portable overhead irrigation unit, designed to give one inch of water over half an acre in four hours was under test from September.

Orchard Crops

200. The citrus orchard recovered satisfactorily from the cyclones of 1960 and, although the trees were rather severely pruned to provide budwood for propagation, they bore good quality fruit. The deficiency symptom on leaves have almost disappeared with adequate nitrogenous fertilization. A russetting of the fruit together with a greasy spotting of the leaves were under investigation. Routine spraying with Zineb and a systemic insecticide were carried out. Cyclone *Beryl* occurred in December when the plants had flowered and had set fruit; less than 5 per cent of fruit was lost.

201. Five varieties of strawberries were received from Kenya in 1959. Following quarantine they were multiplied and observation on yield and performance became possible after transplanting into beds in April. The varieties were not severely attacked by any disease or pest although a cutworm attack after fruiting had to be controlled by a Dieldrin drench. The variety 1-4 was the earliest and the variety 1-12 the latest, the latter was also a very shy bearer. As regards quality, the variety 1-17 is outstanding followed by 1-16, 1-12, 1-4, 1-8, in descending order of merit. The better imported varieties will probably out-yield the local variety.

202. A collection of the nine local varieties of bananas were planted namely : Naine, Ollier, Kisukari, Tahiti, Mille, Faux Gingeli, Nouvelle France, Philibert and Hybride Ducasse. Four experimental plots of Naine and Ollier, the two most popular market varieties, have been established. The plantation where *Cercospora* leaf spot occurred was destroyed.

GRASS AND FODDER

203. A trial with the four strains of Elephant grass, *Pennisetum purpureum* was laid down to determine the yield of grass when it is cut to simulate grazing conditions instead of allowing it to grow tall and stemmy as is the local practice. All plots of Pangola grass (*D. pentzii* and *D. decumbens*) were allowed to mature in order to assist the rapid multiplication of the species.

204. The "Sigor" strain of *Panicum maximum* did not show as much growth in winter as in the summer when it is potentially a heavy yielder. The "Endebess" strain of Rhodes grass *Chloris gayana* might prove to be a heavy yielder throughout the year. This grass grew in the winter months when *Setaria sphacelata*, "Bua River" and "Kazungula" strains and *Panicum maximum*, 'Sigor' strain, made practically no growth. A half acre plot of the "Endebess" strain was planted to investigate the effect of fertilisation on the life of the pasture. Of the *Cenchrus* species, the "Mbalamba" strain of *Cenchrus ciliaris* showed promise. "Guatemala" grass *Tripsacum laxum*, was disappointing, making very slow growth throughout the year.

205. The station supplied planting material of the following grasses: *Digitaria pentzii*, *D. decumbens*, *Panicum maximum* 'Sigor' strain, and the 'Endebess' strain of Rhodes grass to farmers and to the Forest Department. The Forest Department was given sufficient seeds of *Panicum maximum*, 'Sigor' strain to sow on the hills behind Port Louis. Planting material of Pangola grass for the establishment of pastures at Palmar was supplied to strip plant the area between the coast and the road. On the red soils, small plots of Pangola grass were established. Of the other grasses planted at Palmar, *Panicum maximum* "Sigor" strain and *Chloris gayana* "Endebess" strain were more promising on the sandy soils of the station.

206. Among new introductions which show promise are: Siratro A, a legume obtained from the Commonwealth Scientific and Industrial Research Organisation of Australia; it spreads very well and seeds readily; other legumes introduced from the same source are the Peru, El Salvador, Bold Hills, Hawaii, and Guatemala strains of *Leucaena glauca*. From the Grassland Research Station, Kitale, Kenya, Kenya wild clover and *Glycine javanica* were introduced as well as the following grasses: *Brachiaria ruziziensis*, *Cenchrus setigerus*, *Panicum maximum* var *Trichoglume* and *Nandi setaria* of which the first three are interesting. *Panicum coloratum* var *Makarikiensis* has been introduced from South Africa, together with *Sorghum vulgare* and *S. halapense* (sorghum).

Foodcrops

207. The six varieties of *Cajanus indica* (pigeon peas) introduced two years ago have suffered heavily from disease and died. Seeds saved from the plants have been sown. Four varieties of yams were maintained to provide planting material. There were also four varieties of sweet potato in maintenance plots. Seeds of the following vegetables were produced: Bocklah, Beetroot, Carrots, Cabbages, Cauliflower, Citrouille, Leek, Peas, Petai, Pipangaille, Radish, Squash and Soya.

208. A variety trial on groundnuts showed that the variety Manipintar was outstanding both in yield and disease resistance and superior to the popular local variety Cabri. The trial was repeated later in the year. The variety Manipintar has a light red and white variegated seed coat. If the heavier yields are proved to be consistent, then it will eventually replace Cabri. A half acre plot was planted for seed production.

209. Two variety trials on potatoes were carried out. The first laid down early in winter showed that under wet conditions in soil heavily infected with *Pseudomonas solanacearum* potato is not likely to succeed; the crop failed entirely, the yield being less than the seed used. None of the commercial varieties were tolerant of heavily infected soil conditions. The second trial in late winter took place under drier conditions. The variety "King George" was still the best yielder under moderate wilt conditions. The varieties "Suzanna" and "BP₁" were not significantly inferior to "King George".

210. A fertilizer trial with the cabbage variety "Copenhagen market" showed that there was a response to moderate applications of nitrogen, the highest rates having a depressing effect on yield.

BARKLY EXPERIMENT STATION

Development

211. The clearing and development of ten arpents of land, taken over from the Relief Allotments were completed and the whole area was cropped. The Burgess Mist propagator worked satisfactorily, more than half of the propagating area being reserved for tea propagation trials. The best rooting of tea cuttings was obtained when the cuttings were inserted in a medium made up of one part peat and three parts basalt rock sand. Cuttings of *Bougainvillea*, *Lagerstroemia indica*, *Poinsettia*, *Hibiscus*, *Oleander*, *Petrea volubilis*, *Allamanda franciscea*, lime citron, *Passiflora quadrangularis*, vine, Ceylon gooseberry, fig, pomegranate and mulberry were rooted satisfactorily in the propagator.

Seed Production

212. Vegetable seeds were produced on a total acreage of forty acres, twenty-six of which were at Barkly and the remainder at Richelieu, Pamplemousses and Reduit Experiment Stations. The selling prices of seeds and plants were revised generally downwards in October with a view to making available vegetable seeds and economic and ornamental plants as cheaply as possible to the farming community. The mist propagator has made it possible to reduce the cost of plants produced therein. The sales of seeds and plants over the last three years were as follows:—

		1959	1960	1961
		Rs	Rs	Rs
Sale of Seeds	... ..	26,727	28,136	22,647
Sale of plants	... ..	13,759	9,273	15,041
TOTAL	... ..	40,486	37,409	37,688

Citrus

213. Plants of local rough lemon (citron), Florida rough lemon and Zanzibar lime for stock were planted at Barkly. Budding started in April and ended in October and an overall of 50 per cent take was obtained. 1,350 budded plants of oranges and grapefruits were obtained and these will be ready for release by April, 1962. A small citrus nursery was created at Pamplemousses, 270 stocks of local rough lemon were planted and budded from July to November, 240 budded plants being produced. Four small orchards were planted with budded orange and Marsh grapefruit plants produced last year at Barkly, Abercrombie, Pamplemousses and Plaisance. These orchards will not only supply bud wood but will give preliminary information on the citrus potential under various conditions of soil and climate.

Other Orchard Crops

214. A number of mango plants suffered from the attack of *Bactocera* mango beetle. The Barkly orchard was planted with the object of finding out what were the best varieties of mangoes for this area. Of forty varieties planted Baissac, Orphée and Maison Rouge were found to be most suited to this zone. Fruiting of other varieties was very poor. The main letchi orchard has recovered from the effect of cyclones and a large number of layers were prepared.

215. A mango propagation trial was carried out with the object of assessing percentage take on five types of one year old stocks using three methods of grafting. The following varieties were raised from seeds and planted in rows in the nursery, Maison Rouge, Torse, Society No. 3, selected stocks No. 2 and No. 3. An equal number of grafts of Baissac and Eugenie varieties were made on each stock in January, February and March using a side graft, a side tongue graft and the patch budding technique used in Hevea rubber propagation. The results were as follows:—

		PERCENTAGE TAKE																	
		January						February						March					
Stocks		Eugenie			Baissac			Eugenie			Baissac			Eugenie			Baissac		
Method	...	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Maison Rouge		40	—	20	—	—	—	40	20	—	60	—	—	40	—	—	40	—	—
No. 2	...	20	—	20	—	—	—	20	20	20	20	—	—	20	—	—	—	—	—
No. 3	...	—	—	20	—	—	—	80	20	20	—	—	—	—	—	—	—	—	—
Torse	...	—	—	20	—	—	—	—	20	—	—	—	—	40	—	—	20	—	—
Society No. 3		60	20	40	—	—	40	80	20	20	20	—	—	20	20	—	40	—	—

No.1—side tongue, No. 2—side graft, No. 3—budding,

A second trial using the Hevea budding technique was carried out throughout the year using the five stocks mentioned above with scions of Baissac and Eugenie. A good take was obtained on all stocks in February with negative results for the rest of the year.

216. 2,500 letchi layers were prepared using a polythene cover and moist peat as the rooting medium. The layers were cut and potted as soon as the maximum amount of roots had developed, generally in two to three months. Good loam, to which was added some soil from the letchi orchard, was used for potting. The potted layers were watered and kept under an air tight frame covered with polythene sheet (250 gauge) for ten days; the cover was gradually removed over a period of fifteen days so as to harden the plants. This method gave excellent results and the new technique was demonstrated to officers of the extension service and to members of the public at Pamplemousses and Barkly.

VEGETABLE AND FOODCROPS

217. In an observational trial, the lettuce variety Craquante d'Eculy showed better keeping qualities in the field than the varieties Mignonette, Webbs Wonderful, Iceberg and Sucrine which developed floral stalks two months earlier. Another variety trial of lettuce was laid down to compare the local acclimatised mignonette strain with Iceberg, Webbs Wonderful, Yates Early Great Lakes, Imperial 347 and Penlake. Early Great Lakes was susceptible to lettuce drop disease and the flavour of Penlake was superior to that of all others. Mignonette compared favourably with the other varieties both in quality and resistance to disease and also proved to be earlier than the other varieties by a fortnight.

218. A trial with seven varieties of dwarf beans was conducted simultaneously at Barkly and Pamplémousses. In the trial at Barkly harvested as green beans, Long Tom, Victory and Pioneer gave the best results whereas at Pamplémousses, Long Tom and local Haricot Rouge were the outstanding varieties both as green beans and dry seed.

219. Variety trials with carrots again prove the superiority of the local Chantenay strain over all imported varieties. Fertilizer trials were carried out on carrots, dwarf beans and *brede martin* at Barkly. The trial on carrot showed no response to phosphate or potash; 10 kgs per acre of nitrogen gave no significant increase but 20 kgs per acre of nitrogen as sulphate of ammonia gave a significant increase in yield. In the trial on Victory beans harvested green, the response to phosphate at 20 kgs per acre applied as triple superphosphate was highly significant while 40 kgs per acre gave no further response. 10 kgs per acre of nitrogen produced no response but double this amount significantly increased the yield. The use of 30 kgs per acre of potash as sulphate of potash significantly increased the yield but 60 kgs per acre did not significantly raise the yield further. Yields of *Brède Martin* were significantly increased by the application of 10 and 20 kgs per acre of nitrogen. There was no response to phosphate or to potash.

Abercrombie Nursery

220. The area allotted to mangoes was completely planted. Those established early last year grew satisfactorily. The variety of grapes "Napoleon Chasselas", imported from Reunion island, thrived better at Abercrombie than at Barkly or Pamplémousses.

RICHELIEU EXPERIMENT STATION

Tobacco

221. The drought which prevailed in January—February and the severe shortage of irrigation water prevented planting at the beginning of the year. In August, a reduced supply of irrigation water became available and it was possible to plant a number of field experiments in addition to plots for selection work and seed production. Cyclone *Beryl* of 24th and 25th December destroyed all tobacco in the fields. The flowerheads of a large number of selected plants were lost.

Release of New Varieties

222. The Tobacco Board approved the issue of special permits for the planting, on a limited scale, of three new Virginian varieties, namely Vesta 30 Dixie Bright 101 and Oxford 1/18 and of two Burley varieties 11A and 11B. The five varieties had completed a number of tests for yield, quality and resistance to the main root diseases. The three Virginian varieties were planted in March—April on some 40 acres in the main tobacco producing centres of the island. They all grew well, with the exception of Dixie Bright which showed some deficiency symptoms. Vesta appeared to be the most promising of the three varieties. Unfortunately, the season was the worst on record for *Cercospora* leaf spot which caused severe damage in all plantations. The three varieties were again planted in the second half of the year in the Flacq district

and it seems that Vesta will soon be a popular variety with growers. The two new Burley varieties were also tried in small plots in various parts of the island. The results were promising as regards both yield and quality. Subsequently, the Tobacco Board approved the issue of permits for the planting of some twenty acres with these Burley varieties in 1962.

Seed-Beds

223. Seed-beds were sown at the beginning of the year and, as no water supply was available for planting, most of the plants were disposed of to growers. A number of beds were sown with the Burley varieties 11A and 11B and the seedlings were supplied to a number of air curers. The use of sodium methyl dithiocarbamate for the treatment of beds was very widespread amongst tobacco growers. They obtain their supplies from the Tobacco Board which carries adequate stocks of all chemicals approved for use by growers.

224. Investigations on the control of eelworms in seed-beds were continued. An experiment was carried out in July with the object of testing a number of nematocides. The seven treatments included six nematocides and a control. There were two replicates one of which was on land known to be heavily infested with eelworm and the other on land only slightly infested. Samples of seedlings were removed from the beds at monthly intervals for assessment of root infection. All the chemicals tested were effective up to the transplanting stage. Fumigation with methyl bromide, dichloropropene-dichloropropane (Shell D.D.) and ethylene dibromide (E.D.B., Nematox) gave vigorous transplants. Drenches with ethylene dibromide (D 209), sodium methyl dithiocarbamate (Vapam, Unifume) and Mylone gave fairly good results.

Field

225. "Black Shank" resistance trials were continued at Richelieu with twelve recent introductions from the U.S.A. A trial which had been planted in November, 1960, suffered severely from the drought in January—February. Disease incidence was low but it was not possible to assess leaf quality.

226. Tests were continued with various systemic insecticides for the control of insect pests in the field. A high incidence of *Heliothis* and other leaf eating caterpillars frequently occurs in many tobacco plantations and it would appear that these pests have developed considerable resistance to the insecticides in common use. This experiment was a repeat of the one carried out at Pamplemousses in 1960. Plots of 6,000 square feet each were sprayed with one of the following insecticides at 10 days interval from planting to harvest: Rogor 40, Metasystox, Phosdrin, Dimecron applied at the rate of 5 c.c. per litre. All chemicals were very quick acting and very effective. The leaf from the treated plots was not sold to the Tobacco Warehouse but was kept for tests for taint, etc. The use of Rogor 40 has now been approved by the trade.

227. The swing fog was used to apply D.D.T. to a field of tobacco infected with *Heliothis* in January. The tobacco was full grown and the use of a knapsack or motorised sprayer would have caused considerable damage. The

operation was performed late in the afternoon when the wind had dropped and was very successful. The experiment was repeated later in the year in a field at Pamplémousses and again gave very good control of leaf eating caterpillars. Toxaphene applied with the swing fog did not give good results.

228. A randomised block four replicate variety trial was planted in August with varieties including the three established Virginian varieties Yellow Mammoth, Bonanza and Jamaica Wrapper and the three newly released varieties Vesta, Oxford and Dixie Bright. The field had been treated a fortnight before with ethylene dibromide applied by means of a two-row applicator mounted on a Bental disc ridger. All varieties grew satisfactorily and the leaf cured well. The varieties Oxford 1/18 and Jamaica Wrapper yielded significantly less than the other varieties. The cured leaf was damaged by water which entered the barns and grading room during cyclone *Beryl* so that no comparison of leaf quality could be effected.

Seed Production

229. The station is responsible for providing seed to all tobacco growers. Seed production plots of all commercial varieties were planted in May at Pamplémousses and a fair amount of seed of good quality was produced. Seed is distributed by the Tobacco Board and is treated with silver nitrate before issue.

Curing

230. All early season tobacco planted in the island suffered very heavily from a high incidence of Frogeye spot *Cercospora nicotianæ*. Heavy showers of rain occurred in April-June and the weather was unusually warm. Much of the leaf was rendered valueless and had to be discarded in the field. Barn spot was also prevalent. Many growers attempted to save some of their leaves by harvesting when not quite mature but were limited by barn space. Leaf from some tobacco growers was cured in the barns at Richelieu and Pamplémousses stations. No curing experiments could be carried out at Pamplémousses as the leaf was heavily spotted. No curing experiments were possible at Richelieu owing to the small volume of leaf harvested. All leaf produced in the latter part of the year was of good quality and cured very bright.

Leaf Production

231. At Pamplémousses a $2\frac{1}{2}$ acre plot was planted with commercial varieties. The leaf suffered severely from Frogeye spot. 412 kgs of Virginian leaf of a value of Rs 2,217.85 or Rs 5.38 per kilo and 634 kgs of Amarello leaf of a value of Rs 2,508.57 or Rs 3.95 per kilo were produced.

232. At Richelieu only 5 acres of tobacco were planted in August-September. Cyclone *Beryl* destroyed about 2 acres of tobacco and damaged a good deal of cured leaf. Only 787 kgs of Virginian leaf of a value of Rs 5,340.81 or Rs 6.79 per kilo were sold to the Tobacco Warehouse. There was also a small consignment of 52 kgs of Amarello leaf of a value of Rs 313.28 or Rs 6.04 per kilo.

Potatoes

233. Two varieties, C-53 from Kenya and King George from the Union of South Africa, were planted in September in a two acre field at Richelieu for seed production. Two methods were used for the control of aphids and other insect pests. *Metasystox* followed by D.D.T. sprays, again gave very good control of aphids. A new systemic insecticide, Thimet, was applied immediately after planting and also gave very good control of aphids. The incidence of the virus diseases leaf roll and mosaic was fairly high in both varieties. Blight is usually absent at this time of the year. All diseased plants were rogued. The variety King George yielded well but C-53 gave a large number of small potatoes at the end of long runners indicating that it had been planted too late in the season. About two tons of potatoes were graded and stored in crates of various sizes, having been fumigated with gammexane and dusted with D.D.T. to control the potato tuber moth, *Gnorimoschema operculella* which has proved to be the main storage pest in former trials.

234. An experiment was carried out for the control of Blight with eight fungicide treatments Maneb, Zineb, Perenox, Cuprokyet, Cupravit, Tubosan, Phaltan and control. A randomised block design with four replications was adopted. Incidence of blight was low.

Other Crops

235. At Richelieu five acres were planted in August—September with dwarf beans for seed production; yields were fair. At Pamplémousses, a 2 acre field was planted with beans in October but Cyclone *Beryl* destroyed an otherwise promising crop.

236. Small samples of seed of thirteen varieties of rice imported in 1959 from Ghana, Madagascar and British Guiana were sown. On some beds the seedlings suffered from an acute chlorosis due to an attack by a *Fusarium* while growth was normal on other beds which had been treated with methyl bromide. Despite a shortage of water, a fair amount of seed was obtained. The seed was stored at Barkly and then was forwarded to Rodrigues for further trials.

237. The crop of sugar-cane was only 470.79 metric tons from 27 arpents, an average of 17.4 tons per arpent. This is due to drought and shortage of irrigation water. Some planting material was sold.

238. Further plantings of *Digitaria pentzii* and *D. decumbens* were made and planting material from the station was used for planting at Palmar, La Ferme, etc.

Mechanization

239. There were two main additions to the mechanical implements at Richelieu, a rotary slasher and a tiller. The slasher is a maintenance tool and consists of three small chains, attached to a vertical shaft which rotates rapidly. It will chop grass, maize and tobacco stalks very efficiently and speedily. It is very useful for working under difficult conditions, such as in stony areas. The tiller is an old implement of the Massey—Ferguson range

and consists of spring loaded heavy duty tynes which give a fairly good tilth. It can be used as a substitute to the plough to give a stubble mulch in seasons when wind or water erosion is a danger.

Dairy

240. The herd was reduced from 10 to 5 cows by the sale of sterile and mastitis cases. The total milk production was 15,985.3 litres which gives 4.86 litres per cow kept per day. Seven bull calves and one heifer were born during the year and the dairy building was virtually rebuilt by the Engineering Division.

241. The silos, which had been filled with cane tops towards the end of 1960, proved of great assistance in feeding the cows during the drought which prevailed in January and February. The silos were filled with cane tops during the sugar crop as no maize could be grown for silage earlier in the year.

The Royal Botanic Gardens of Pamplémousses

242. All the dead trees were removed with the help of the Forest Department. A Rehabilitation Committee was set up which prepared a report and made recommendations which were sent to the Ministry and were approved. Every endeavour is being made to restore the gardens following cyclonic and flood damage. Two consignments of useful trees were received one from Singapore and the other from Kenya. The nursery at the gardens has helped by producing quantities of plants for distribution through the Barkly and Abercrombie nurseries.

XVIII. Plant Pathology

TOBACCO

243. The incidence of Brown spot, *Alternaria longipes*, was high in late plantations at St. Julien towards the end of November following heavy rains early in summer. Frogeye spot *Cercospora nicotianæ*, was seen on overripe leaves, in an exposure plot at Reduit Experiment Station outside the tobacco districts, at the beginning of March and following a short rainy spell. There was very little Frogeye spot in commercial plantations in previous months so that the possibility of spores being carried on persons appeared unlikely. The occurrence of alternate hosts is therefore possible. The disease would require the presence of senile leaves to establish itself, and high humidity would be essential for sporulation and spread. Frogeye spot flared up later in commercial plantations of rank growth and uneven ripening as a result of protracted heavy rains and high temperatures. Planting was delayed because of drought but the benefit of freedom from Frogeye spot which can be expected in late plantings did not materialise. Winter plantings were rather freer of Frogeye spot than usual but a few spots in the field and rather more barn spot appeared with the onset of the rains.

244. In a variety trial under very dry conditions at Richelieu early in the year, Dixie Bright 28 and Hicks Broad Leaf showed 20 per cent and 30 per cent mortality due to Black Shank disease. The figures for Yellow

Mammoth, the standard commercial variety, were 12 per cent. The incidence of Black Shank in Dixie Bright 28 was even higher last year while it was nil in Yellow Mammoth in a trial under average conditions. A few cases of wilt or root disease in Amarello and Yellow Mammoth were found to be due to Bacterial Wilt under waterlogged conditions at Flacq.

245. Burley II A and II B were affected with Powdery Mildew up to December at Richelieu; Amarello is practically immune to this disease. A yellowing of very young plants in seed beds previously treated with Vapam at Ile d'Ambre was attributed to Root Knot Nematode reintroduced from a contaminated water supply. Root Knot Nematode caused blotchy ripening at Caroline and failure in patches at Belle Mare. A nematode Black Shank complex is now known to be an important factor in tobacco production. Hole application of a nematocide in the field may clear the way for the introduction of improved tobacco varieties with moderate resistance to Black Shank.

TEA

246. A die back of tea seedlings in a nursery at Dubreuil was suspected to be due to girdling at the collar by snails or slugs; control with fungicide drenches was recommended.

POTATO

247. A variety trial of potatoes at Curepipe Experiment Station suffered from severe blight; the variety Pimpernel gave the highest yield with less than 20 per cent defoliation, all 15 other varieties were completely defoliated. The variety C 53, which was immune to blight came out 6th on the basis of yield in spite of less than 10 per cent germination. The variety King George was seriously affected by late blight at Solitude and Massilia where the disease seldom occurs and where two fungicide applications in a season are usually considered adequate. In September at Floréal, the variety Kennebec, which is planted because of its relative resistance to late blight, was severely affected by this disease. Low volume spraying was investigated in a 4 replicate trial in a grower's field at Reduit. An application rate of 50 gallons with 2 lb. of Zineb per arpent gave satisfactory coverage of both the lower and the upper leaf surfaces; 35 and 20 gallons per arpent were found not to be satisfactory. In wet localities, a weekly spray schedule of 6 to 8 applications is recommended with an application rate of 50 gallons per arpent.

248. Bacterial Wilt, *Pseudomonas solanacearum* was severe at Reduit Experimental Station. This station is therefore no longer suitable for potato trials for yield or resistance to late blight. There was a high incidence of leaf roll virus in field plantations of the varieties King George and Kennebec grown from South African seed; newer varieties like BP 1 and Suzanna were less affected. Plots from Japanese ware potatoes were also severely infected with various virus diseases. Seed of the variety C 53 was highly infected with surface *Rhizoctonia sclerotia* which may have been the cause of low germination. *Rhizoctonia* was amenable to control by fungicide dips; dipping of seed pieces in Aretan too soon after cutting may however cause rotting.

MAIZE

249. There was little rust at the beginning of the year owing to the dry weather, outbreaks occurred in certain localities at the beginning of March following a short rainy spell. A zineb spraying trial at Reduit gave significant results in spite of some rust in the treated plots. It does not appear that chemical control of maize rusts can be economical.

GROUNDNUT

250. In a preliminary trial at Reduit good control of the *Cercospora* leaf spots was obtained with dispersible sulphur sprays; yields were 9 lb. for the sprayed plot and 3 lb. for the control plot.

RICE

251. Seed beds of 11 rice varieties were nearly all affected with an intense chlorosis caused by a *Fusarium* with *Gilberella fujikuroi* in association. Soaking the seed in 1 per cent formaldehyde for 1 hour was advised for future plantings.

BEANS

252. Severe wilt on beans occurred at Rivière des Anguilles as a result of infection with Halo Blight, *Pseudomonas phaseolicola*. Victory beans from imported seed at Vacoas was free from Halo Blight under conditions favourable to the disease. A foot rot of young bean plants at Richelieu and Arsenal was found to be due to *Macrophomina phaseoli*, a new record.

PEAS

253. A wilt of unknown cause with a *Fusarium* in association was severe at Réduit, both Greenfeast and Local peas were affected. Powdery Mildew caused more damage than *Ascochyta* leaf spot to the standard varieties at Curepipe but less at Vacoas. *Ascochyta* leaf spot was severe on a Chinese "mange tout" variety at Mapou. *Ascochyta pisi* was identified from material forwarded to the Commonwealth Mycological Institute.

ONION, GARLIC AND LEEK

254. Root knot nematode galls were observed in onion beds at Rivière des Anguilles on roots of dwarfed plants. Purple blotch, *Alternaria porri*, was severe at Arsenal but light on a simultaneous plantation at Mapou. Leaf splitting of onions and tip blight of garlic were found to be caused by *Stemphylium botryosum*. *Cercospora duddiae* was observed on a mature plantation near Plaisance Airport; so far it has not been recorded in other areas.

TOMATO

255. Grey Leaf Blight, *Stemphylium solani*, was present at all times but flared up along with Later Blight, *Phytophthora infestans*, which affects the foliage and fruit of tomatoes following rain. Bacterial Wilt re-appeared in plots at Arsenal and Mapou which had been free from wilt for several years presumably as a result of the application of large amounts of coral sand. Tomato plants affected with stem splitting, apical necrosis, stunting and bushiness responded to the application of borax, which should not however

exceed rates of 4 lb per arpent owing to the danger of phytotoxicity, Tomato plants grown in tins with soil treated with vapam against Bacterial Wilt and nematodes rotted with *Pectobacterium carotovorum*, after heavy rains.

GINGER

256. Owing to the presence of two scale insects on the rhizomes, ginger for export was fumigated with Methyl Bromide at atmospheric pressure at the rate of 10 gms. per cubic metre for 24 hours and phytosanitary certificates issued accordingly.

OTHER VEGETABLES

Brassicæ

257. *Fusarium* Yellows occurred again on some varieties of cabbage. In a preliminary fungicide trial against Powdery Mildew at Pamplémousses, the yield of long hot chillies were: Karathane treatment: 24.48 kgs, Phaltan treatment: 24.54 kgs and control: 13.37 kgs per 100 plants.

Cucurbits

258. *Colletotrichum lagenarium*, a first record, caused severe leaf spotting on green cucumbers while the common large white type is apparently resistant; water melon and calabash were also susceptible. *Cercospora justiciicola*, was recorded for the first time on leaves of water melon.

Eggplant

259. In a four replicate Bacterial Wilt resistance trial at Pamplémousses mean plot yields were: Cipaye (local): 46.7 kgs, Kopek; 41.2 kgs, Motale: 37.2 kgs, Yates supreme: 3.0 kgs, Farcié: 1.8 kgs. At Reduit the final stand in a similar trial indicated the same trends; Rosita failed completely.

Lettuce

260. There was no difference between control plots and those of seed producers which had received various rates of Botrilex (20 per cent PCNB) as preplanting soil treatment at Barkly. The pathogen *Sclerotinia sclerotiorum* was generally not very active this year probably owing to the absence of prolonged cold spells necessary for the production of ascospores. A leaf spot caused by *Cercospora longissima* with *Stemphylium botryosum* in association caused considerable damage to seed bearers, especially of the Sucrine variety.

Banana

261. *Cercospora* leaf spots, *Mycosphaerella musicola*, was seen at Flacq. The ban on the movement of planting material from the variety collection, where the disease had first been recorded, was therefore lifted; the only other previous focus at Rose Belle seems to have disappeared.

Citrus

262. Canker was seen on the Rodrigues lime, Florida rough lemon and Waterkloof sweet orange at Labourdonnais, Reduit and Curepipe respectively; some anthracnose was reported. Chlorosis and other symptoms formerly attributed to zinc or manganese deficiencies or to tristeza disease may be due to nitrogen deficiency; there was good response to frequent dressings of ammonium sulphate especially during fruit set.

Mango

263. There was a good crop which was unfortunately destroyed at the beginning of the ripening by cyclone *Beryl* in December. A group of trees of the Aristide variety at Richelieu was sprayed with Captan and Phaltan. There was no significant difference in number of fruit between the treated and untreated trees although anthracnose and powdery mildew were observed to cause fruit drop on other more susceptible varieties.

Pineapple

264. Good response has been reported following dressings of borax at 4 lb per arpent for the browning of the flesh. Green leaf spot was observed on Cayenne plants infested with mealy bug.

Roses

265. Black spot affected roses as usual in wet weather while the *Mycosphaerella rosigena* var *Madagascarensis* leaf spot caused severe damage during the dry first quarter. Powdery Mildew appeared with the onset of the cold weather. Phaltan which has come into common use has created a new interest in rose growing. Weekly preventive sprays of Captan have been recommended for the control of geranium rust; the treatment however, though effective, is rather laborious.

MISCELLANEOUS DISEASES AND FUNGI

266. The following were recorded for the first time in 1961;—

On <i>Acer palmatum</i> ...	Die back	...	<i>Cryptodiaporthe densissim</i> (Ell. and Ev.) Wehm., var <i>spicata</i> (Ell. and Ev.)
On <i>Albizia lebbek</i> ...	—	...	<i>Phoma</i> sp.
On <i>Asystasia coromandeliana</i>	Leaf spot	...	<i>Cercospora justicicola</i> . Tai.
On <i>Avena sativa</i> ...	Smut	...	<i>Ustilago hordei</i> (Pers) Lagerh. ✕
On Bean ...	Charcoal rot	...	<i>Macrophomina phaseoli</i> (Maubl) ✕ Ashby.
On <i>Calocasia</i> sp. ...	Leaf spot	...	<i>Ascochyta</i> sp.
On <i>Capsicum</i> sp. ...	Fruit Rot	...	<i>Phytophthora parasitica</i> Dastur
On <i>Chrysanthemum</i> sp. ...	Rust	...	<i>Puccinia Chrysanthemi</i> (Rose) ✓
	Leaf Spots	...	<i>Septoria</i> sp. <i>Cercospora Chrysanthemi</i> Heald and Wolf.
On <i>Citrullus Vulgaris</i>	Leaf Spots	...	<i>Cercospora citrullina</i> Cooke. ✕
	Anthrachnose	...	<i>Colletotrichum Lagenarium</i> (Pass.) Ell. and Halst. <i>map 213</i>
On <i>Crepis japonica</i> ...	Leaf spot	...	<i>Septoria crepidis</i> Vestergr.
On <i>Cryptomeria</i> sp. ...	Blight	...	<i>Corticium salmonicolor</i> Berk and Br.
On <i>Cucumis melo</i> ...	Downy mildew	...	<i>Pseudoperonospora cubensis</i> (Berk. and Curt.) Rost. <i>map 285</i>
On <i>Erythrina</i> sp. ...	Leaf spot	...	<i>Glomerella cingulata</i> (Stonem) Spauld and Schrenk.
On <i>Holcus lanatus</i> ...	Rust	...	<i>Puccinia coronata</i> Corda

On Iceland Poppy ...			<i>Periconia byssoides</i> Pers. ex Schw. ✕
On Jak fruit ...	... Leaf spot	...	<i>Ascochyta</i> sp. <i>Glomerella cingulata</i> (Stonem) Spauld and Schrenk.
On <i>Lagenaria vulgaris</i>	Anthraxnose	...	<i>Colletotrichum lagenarium</i> (Pass.) Ell. and Halst.
On <i>Molucella</i> sp.	... Leaf spot	...	<i>Corynespora cassicola</i> (Bert. and Curt.) Wei.
On <i>Morus nigra</i>	... Powdery mildew		<i>Phyllactina corylea</i> (Pers) Karst.
	Rust	...	<i>Cerotelium fici</i> Butl. ✕
On Onion ...	... Leaf spot	...	<i>Cercospora duddiæ</i> Welles. ✕
On Papaw ...	... Leaf spot	...	<i>Cercospora papayæ</i> Hansford.
On <i>Paspalum dilatatum</i>	Leaf spot	...	<i>Cercospora</i> sp.
On <i>Pyrethrum</i> sp.	... Root rot (?)	...	Undetermined.
	On leaves	...	<i>Alternaria tenuissima</i> (Ness. ex Fr.) Wiltshire.
On <i>Solanum nigrum</i>	... Leaf spot	...	<i>Cercospora atromarginalis</i> Alk.
On Tomato ...	... Collar rot	...	<i>Phomopsis</i> sp. <i>Sclerotium rolfsii</i> Sacc.
On <i>Vigna</i> sp.	... Leaf spot	...	<i>Phyllosticta</i> sp.
(Voehme)			
On <i>Viola</i> sp.	... Leaf spot	...	<i>Sphaceloma violæ</i> Jenk. ✕ <i>Colletotrichum</i> sp.
On <i>Zizyphus jujuba</i>	... Leaf spot	...	<i>Cercospora jujubæ</i> Chowdhury

PLANT INSPECTION AT AIRPORT AND CUSTOMS

267. Plant Import permits for most commercial items are now issued at the Plant Inspection Office at the Customs in Port Louis. The Mallet equipment for fumigation with methyl bromide under atmospheric pressure came into operation in January. Equipment for the alternate use of Ethylene dibromide, which is less damaging to fruit has been ordered. There was one meeting of the Plant Introduction and Quarantine Standing Committee. Minor amendments to the legislation, the revision of Bulletin No. 88. "Summary of the regulations relating to the restrictions on the Importation into Mauritius of Plants, Animals, and Animal Products", amendments to the Plant Import Permit forms and a schedule of charges and fees for fumigation were approved. Statistics on the import of seed and ware potatoes from all sources and of fruit from India were compiled.

XIX. Entomology

THE GIANT SNAIL *ACHATINA FULICA* AND ITS PREDATOR *EUGLANDINA ROSEA*

268. Twenty specimens of the predatory snail, *Euglandina rosea* were recovered in the field from various release localities which indicates that this snail can thrive in any region of the Island. Several batches of eggs have hatched very satisfactorily in the laboratory and mass breeding is being tried with a view to providing locally bred snails for release in the fields; mass introduction is also being contemplated.

269. Another predatory snail, *Conaxis quadrilateralis*, was received from Hawaii. It is reported to be devastating the giant snail, *Achatina fulica* and its eggs elsewhere. Its behaviour and optimum living conditions are being determined in the laboratory.

FRUIT FLIES

270. Fruit flies were troublesome on fruit in some localities; *Ceratitis rosa* was found in grapefruit from Moka. 19 shipments of parasites were received from Hawaii comprising the following species:—

					No. received
<i>Opius longicaudatus</i>	...	...	...	...	31,700
<i>Opius oophilus</i>	...	...	...	...	8,930
<i>Dirhinus giffardii</i>	...	...	...	...	23,500
<i>Syntomosphyrum indicum</i>	...	...	...	...	170,000

Whereas the first three species travelled very well, the introduction of the small *Syntomosphyrum indicum* had to be stopped owing to the high percentage mortality during the journey. These parasites were liberated throughout the Island in orchards and cucurbit fields; a survey will be commenced in 1962 to determine to what extent they have become established. The possibility of introducing another pupal parasite of *Ceratitis* and *Dacus* spp., *Opius concolor* reported efficient in other countries is being studied. A test consignment of parasitised pupæ of *Ceratitis* was received in December from Antibes, France. The parasites emerged very satisfactorily 8 days after their arrival and were subsequently liberated in the fields.

BIOLOGICAL CONTROL OF WEEDS

271. The shrub *Lantana aculeata* (vieille fille), which grows in pastures and orchards, is now regressing in many localities where it is efficiently kept under control by the tingid bug *Teleonemia scrupulosa*. This bug was first recorded in Mauritius in 1952; since that time it had scarcely been noticed and being only in February 1961 that its beneficial effects were noticed in many localities. It has been liberated in many places which it had not yet reached and has now been found to be very active almost everywhere. Its defoliating effect on *Lantana* is also considerably helped in some areas by the noctuid *Hypena strigatus*; another noctuid, *Hypena jussalis*, and a seed fly will be introduced from Hawaii to help *Teleonemia* in the complete eradication of *Lantana*.

PESTS OF TEA

272. Nematodes were extracted from roots of tea seedlings at Vuillemin and identified as *Eucephalobus* sp. Investigations are in progress to determine whether the stunted growth of seedlings in seed nurseries could be due to the presence of these nematodes.

PESTS OF PALMS

273. The Hispid *Brontispa limbata* caused severe damage to palms in all localities; it was very effectively controlled by either Phosdrin, D.D.T. or Dieldrin.

CALIFORNIAN SCALE ON ROSE TREES

274. Trypholine B (oleo-parathion emulsion), Gusathion and Methyl folidol have been tried against the troublesome scale *Aonidiella aurantii*. All three have been found effective in the control of this pest. However, in two localities where the infestation was very high, the plants had to be uprooted and the scales brushed off; in the meantime, the beds were fumigated under plastic sheets with methyl bromide at the rate of 1 lb per 100 square feet and the rose trees were replanted 3 days after the fumigation. The plants re-established well and the control of the pest was satisfactory.

STOMOXYS NIGRA

275. The stable fly, *Stomoxys nigra*, was effectively controlled by sprayings with Baytex and D.D.T. The mixture of insecticides has a residual effect of about 3 months and their action can be helped by regular monthly fogging. A "fly-cake" containing the organo-phosphorus insecticide D.D.V.P. has been tried in the laboratory; its attractive and killing properties have been found to be better than the fly mats previously used. A device for fly control, the "Synchromist actuator" has been received and tested. This apparatus discharges automatically a mist of insecticide at intervals.

SCREENING OF INSECTICIDES

276. Sevin, a synthetic carbamate, was found to be effective against bean and pea pests; it is active against a wide range of insect pests as a contact and stomach poison with good residual properties. It is not recommended for use on Pigeon Pea because of its phytotoxic action on the plant.

277. Phostoxin (Aluminium phosphide) tablets were tested against grain pests in grain stores in two localities. Complete results are not yet available. Large scale use of the tablets at the Granary is under consideration.

278. Gusathion and Methyl Folidol, two organo-phosphorus insecticides, proved very effective against scale insects, even against the resistant *Coccus hesperidum*. However, their use presents considerable hazards and must be restricted to thoroughly qualified staff.

279. Experiments with Shelltox Aerosols (containing dieldrin) were also carried out. This insecticide is very effective against cockroaches, flies, ants, millepedes, etc., especially when used in conjunction with insecticidal lacquers.

280. Occiron (an Aguettant-Chimie product) and "Osmonds Latest wood-worm remover" were tested against wood boring beetles and timber pests in general and have been found to protect furniture effectively against wood-worm attack.

281. Sayfos (menazon), a trianzinyl phosphate insecticide has proved to be highly effective against aphids and its low mammalian toxicity is a definite advantage.

282. Thimet, which has given excellent results in the control of mites and aphids on potatoes, does not appear to have any effect on cut-worms and leaf-eating caterpillars. Treated plants retained their leaves longer than plants in control plots. This effect is beneficial to the plant and results in production of larger tubers.

METHYL BROMIDE FUMIGATION

283. Fumigation with methyl bromide at the fumigation plant at Fort George was started early in February. It is a boon to cigarette manufacturers, especially against the cigarette beetle, *Lasioderma serricorne* infesting stored tobacco leaf. At the request of two planters soil was also fumigated experimentally.

MISCELLANEOUS

284. The potato tuber moth, *Gnorimoschema operculella* caused extensive damage at Richelieu on stored potatoes. No really effective control measure was found apart from cold storage or treatment under bags sprayed with dedetane (microcrystalline DDT) combined with regular fogging.

285. Towards the end of the year, there was an unusually high infestation of cutworms, *Prodenia litura*, *Plusia chalcites* and *Plusia orichalcea* particularly in the Bambous and La Chaumière areas. The infestation was so severe that the crop was completely defoliated. Phosdrin proved very effective in controlling these pests.

286. A new insect, *Bagrada hilaris* Burm. (Hemiptera, Pentatomidæ), caused severe damage on "Chou de Chine" (*Brassica* sp.) at Abercrombie. The pest is successfully controlled by Phosdrin and Orthodibrom.

287. Numerous visits were paid by officers of the Department to growers upon request; the following is a list of pests particularly troublesome during the year:—

- Dysmicoccus brevipes* on pineapple
- Brontispa limbata* on palms
- Crociodolomia binotalis* on cabbage and cauliflowers
- Nacoleia præteritalis* on bean
- Spatulipalpia pectinatella* on sweet sop (Attier)
- Planococcus citri* on sweet sop
- Planococcus lilacinus* on sweet sop
- Heliiothrips hæmorrhoidalis* on Avocada and Indian Almond
- Plutella maculipennis* on Watercress, cabbage and cauliflower
- Batocera rufomaculata* on mango
- Cryptophlebia peltastica* on Flamboyant
- Choreutis bjerckandrella* on artichoke
- Flatops's nivea* on citrus and Hibicus
- Aonidiella aurantii* on rose trees.

288. At the request of the Granary Supervisor, the regular disinfection of the granary against stored grain pests was undertaken. Three methods were used:—

- (a) Space sprays—Fogs and mists of synergized pyrethrins (piperonyl butoxide).
- (b) Space sprays of pyrethrum and stack dusting with 4 per cent malathion.
- (c) Space sprays of malathion (using S.D.C's Hexafog Top 5) and stack dusting with 4 per cent premium grade malathion.

It was found that alternation of (b) and (c) produced most effective control and the highest lethal effects on pests.

MODERNISATION OF EQUIPMENT

289. During the year, various types of power sprayers were tested. The "Vetiver Charging Group" and Genimic Twin Rig Sprayer appear suitable for the spraying of potato plantations. The former charges six Favori Colibri sprayers ready for spraying in a few minutes; it is available to potato growers through the Extension Service. The latter is a tractor mounted sprayer designed to spray over and under leaf.

290. An "Ortholux phase-contrast microscope" was received for research work.

291. A new insectarium is being built; part of the building was made into a greenhouse for the breeding of insects on their host plants. A dark room was constructed and is being suitably equipped for photographic and microscopic work.

292. A small Museum has been opened where the insect fauna of Mauritius is displayed. This is of considerable value to Extension Officers and students of the Agricultural College for the identification of insects.

293. Systematic collection of insect and acarine pests was pursued during the year. Among the ten expeditions made with students of the Agricultural College, four were for night collection and one was on Ile d'Ambre. The following are new or otherwise interesting records of insects identified by the Commonwealth Institute of Entomology and other world specialists during 1960-61.

COLEOPTERA

Coccinellidæ

Nephus sp. (?) *severini* Wso. Two species of *Nephus* are recorded from Mauritius and Rodrigues *N. oblongosignatus* (Muls.) and *N. seychellensis* Sicard. This species is either new or near *severini*.

Brumus sutaralis (E.)—Hitherto reported as rare—found in large numbers in sweepings in Black River in the late evening.

*Bostrychidæ**Apate congener* Gerst*Curculionidæ**Camptorhinus brullei* Boh.*Cratopus caliginosus* Boh. collected at Macabe forest.*Oxydema procer* Boh. (= *subcaudata* Frw.)*Baris multivaga* Champ. Var.*Palacoconynus* sp.*Cratopus* sp. nr. *tigratus* Hust.*Cerambycidæ**Phelocalocera bisignata* Chevr.*Noemia fulvescens* Fairm.*Nethinius* sp.*Lamiidæ**Propoplus banksi* (F.)*Celosterna scabrator* (F.) (from Reunion—reported there as a pest of the
Mango tree)*Bruchidæ**Caryedon gonagra* (F.)*Anthribidæ**Araecerus faxiculatus* Degeer. Very troublesome on stored peanuts*Eucorynus crassicornis* (F.)*Araecerus* sp.*Nesidobius thomasseti* Jord. *Dinephrius dorsatus* (Frm.)*Dinephrius gigas* (F.) V. *cervinus* Klug.*Aphodiidæ**Rhyssemus germanus* (L.)*Dasytidæ**Pelecophrus obliquata* Allu*Ptinidæ**Ptinus binodulus* Boh.*Hydrophilidæ**Dactylosternum pygmæum* Reg.*Dermestidæ**Orphinus fulvipes* (Guerin)—a plague of insect collection.*Cucujidæ*“*Læmophlœus*” (sens. lat) sp. ? *coquereli* Graw.*Psammœcus* sp. nr. *insularis* Sharp*Tenebrionidæ*Gen. nr. *Platydema*

*Anthicidæ**Anthicus* sp.*Staphylinidæ**Pinophilus rudis* Bernh*Dytiscidæ**Laccophilus posticus* Aube

LEPIDOPTERA

*Nymphalidæ**Precis philida* F. (From Agalega)*Noctuidæ**Nycteola mauritia* de Joan*Phlogophora discistriga* Walk.

Hypena strigatus F.—(causes severe defoliation of *Lantana*:—This species had previously been wrongly identified as *Hypena jussalis* Walk.).

DIPTERA

*Tachinidæ**Pseudoperichaeta pacta* Vill.*Oestrocharis* sp.*Cadurcia* sp.*Calliphoridæ**Bengalia depressa* Walker*Platystomatidæ**Plagiostenopterina ruficeps* Hendel (From Agalega)*Elassogaster* sp.*Lauxaniidæ**Sapromyza* sp. nr. *testacea* Guerin*Ephydridæ**Discomyza maculipennis* ex Tomato fruits.*Stratiomyidæ**Evaza javanensis* Meiji.*Gobertina picticornis* Bigot*Tinda* sp. (?) *javana* Macq.*Cephalochrysa hovas* Bigot*Ulidiidæ**Acrosticta pallipes* Crimshaw*Muscidæ**Anthomyia amoena* Macq.*Fannia* sp. (only larval skin collected—adult unknown)*Orchisia* ? sp. N.

(According to R. W. Coe of the Commonwealth Institute of Entomology (B.M.) there is only one species described in this genus and the specimen sent for identification seems to represent a new, closely related species).

Syrphidæ

Epistrophe sp.

Tabanidæ

Philoliche pennata Oldroyd.

Therevidæ

Phycus. sp.

Dolichopodidæ

Chrysosoma sp.

Trypetidæ

Parasphenicoides binaria Loew. suspected to breed on *Lippia asperifolia* and frequenting scale-infested *Lantana* probably for honey-dew.

TRICHOPTERA

Leptoceridæ

Athripsodes pauliana Ross.

HEMIPTERA

Tingidæ

Corythauma ayyari Drake

Teleonemia scrupulosa Stal—first collected in 1952 found again in 1960—now abundant.

Cicadellidæ

Nesosteles sp. nr. *sanguinescens* Kirk

Exitianus (Euscelis) capicola Stal

Penthimia bella Stal

Igerna bimaculicollis Stal (new record for Mauritius)

Miridæ

Deraeocoris sp.

Trigonotylus dohertyi Dist.

Lygus sp.

Probosidocoris feanus Popp. (new record for Mauritius)

Psallus sp.

Anthocoridæ

Lyctocoris sp. ex Bird's nest (*Ploceus spilonotus*)

Lygaeidæ

Paromius apicatus Stal

Lachnesthus albidomaculatus Dist.

Hormopleurus (Melanotelus) argillaceus Reut.

Rhyparochromus consocialis Dist.

Pachybrachius (Orthea) sp. (new record for Mauritius)

Paromius sp.

Naudarensis sp. (new record for Mauritius) a severe pest of *Brassica* sp.

Pentatomidæ

Bagrada hilaria Burm. (new record for Mauritius)

Andrallus spinidens Fabr. (new record for Mauritius)

Acrosternum sp. ex *Wikstroemia indica* May. collected on Ile d'Ambre

Phricodus hystrix Germ. ex sweepings various grasses

Flatidæ

Ulundia madagascariensis Sign.

Coreidæ

Tupalus arcuatus Fabr.

Leptocoris mutilata Gerst. (new record for Mauritius)

Nabidæ

Arbela sp. (new record for Mauritius)

Nabis capsiformis Germ.

Gerridæ

Limnogonus leptocerus Rent.

Halobates sp.

Notonectidæ

Anisops vitrea Sign.

Corixidæ

Sigora hoggarica Poisson (*lundbladiana* Hutch)

Cixiidæ

Brixia bohemani Stal

(Recorded from Mauritius by Stal in 1854; not collected therefore for a century)

Achaemenes sp. (new record for Mauritius)

Aleyrodidæ

Bemisia sp. ? *tabaci* Genn.—Found on lower surface of *Lantana*. An interesting record as this white fly is the vector of tobacco leaf curl.

HYMENOPTERA

Chalcidæ

Brachymeria amenocles Walk

Antrocephalus sp. nr. *renalis* Wtrst.

Brachymeria lepida Masi.

COLLEMBOLA

Poduridæ

Hypogastrura (Ceratophysella) c.f. *communis* (Folsom) (collected on decaying cucumber)

ACARINA

Acaridæ (Tyroglyphidæ)

Tyrophagus putrescentiæ Shrank collected on chocolate

Oribatulidæ

Phauloppia sp. collected on *Anthurium* plants

Eriophyidæ

Aceria tulipæ Keifer causes severe damage to onion plants (*Allium cepa* L.)

Anystidæ

Anystis sp. parasitic on *Blatella germanica* L.)

Erythraeidæ

Erythraeus sp. (under Tegmina of *Blatella germanica* L.)

THYSANURA

Acrotelsa collaris (Fab.)—causes damage to books

Mr. P. Choo Foo, Assistant Agricultural Officer at Rodrigues, who spent 2 weeks in the Division of Entomology during his leave in Mauritius in 1961 sent a small collection of insects from Rodrigues. A list of names is given below:—

ORTHOPTERA

- (1) *Polyspilota aeruginosa* Goeze (Mantidæ)
- (2) *Gryllus bimaculatus* Deg. (Gryllidæ)
- (3) *Acheta domesticus* L. (Gryllidæ)
- (4) *Homorocoryphus differens* Serville (Tettigonidæ)

HYMENOPTERA

- (5) *Enicospilus* sp. (Ichneumonidæ)
- (6) *Polistes hebræus* F. (Vespidæ)
- (7) *Evania appendigaster* F. (Evaniidæ)
- (8) *Trypoxylon evrans* Saussure (Trypoxylonidæ)
- (9) *Apis mellifica* F. (Apidæ)
- (10) *Ampulex compressa* Fbr. (Ampulicidæ)
- (11) *Sceliphron quodi* Vach. (Sphecidæ)
- (12) *Megachile lanata* F. (Megachilidæ)
- (13) *Megachile rufiventris* Guer. (Megachilidæ)

COLEOPTERA

- (14) *Protætia fusca* Herbst (Scarabaeidæ)
- (15) *Protætia versicolor* F. (Scarabaeidæ)
- (16) *Agrypnus fuscipes* F. (Elateridæ)
- (17) *Diamotocephala unicolor* F. (Cerambycidæ)
- (18) *Calandra oryzae* L. (Curculionidæ)

HEMIPTERA

- (19) *Oncocephalus angulatus* Rent. (Reduviidæ)
- (20) *Nezara viridula* L. (Pentatomidæ)

LEPIDOPTERA

- (21) *Phalanta phalantha* Dr. (Nymphalidæ)
- (22) *Macroglossum milvus* Bdv. (Sphingidæ)
- (23) *Utetheisa elata* F. (Arctiidæ)
- (24) *Hypolimnys misippus* L. (Nymphalidæ)
- (25) *Amauris phædon* L. (Nymphalidæ)

DIPTERA

- (26) *Musca domestica vicina* L. (Muscidæ)

294. The Entomologist, Mauritius Sugar Industry Research Institute, reports the successful establishment of a beneficial cane borer parasite *Microdus (Bassus) stigmaterus* Cress. This parasite has been introduced from Trinidad in 1951 by the Division of Entomology of the Department of Agriculture. Specimens have also been collected at Belle Mare by students of the Agricultural College.

295. *Phanerotoma* sp., a parasite of pests of Pigeon Pea *Cajanus cajan* Millsfs has also been collected by a student of the Agricultural College.

VISITORS

296. The Division was honoured during the year by the following visitors:—

Mr. John P. Bruyns Haylett, of Dow Chemical International Ltd.

Mr. Stainton, of the Universal Crop Protection Ltd.

Mr. Jean Marc Miguet, Ingénieur des Eaux et Forêts, Ile de la Reunion.

Mr. Jean Fontaine, Ingénieur des Travaux des Eaux et Forêts, Ile de la Reunion.

Mr. H. Lange, of Farbwerke Hoechst, Germany.

XX. Agricultural Chemistry

ANALYSES

297. Some 1,200 samples of various products were analysed; most of the analyses were carried out for various Divisions of the Department.

FEEDINGSTUFFS

298. About 200 samples of raw materials were forwarded by the Live-stock Feed Factory and the Agricultural Division for the purpose of ascertaining whether they were up to standard for incorporation into animal feeds. Samples of concentrate animal feeds were analysed monthly as a check on the efficiency of mixing.

MOLASSES

299. An experiment was made on the denaturation of molasses by addition of meat meal or fish meal. Alcohol produced from such denatured molasses had a residual smell which was unfortunately not disagreeable.

FODDER

300. The newly imported grasses were periodically analysed for dry matter and protein content with a view to assessing their value as fodder under local conditions. Some results are listed below:—

Name	Date cut	Age (Months)	Dry Matter %	Protein % D.M.
<i>Chloris gayana</i> Endebess (Rhode Grass) (sown February 1961)	24. 4.61	2	17.5	12.3
	30.10.61	8	18.7	12.5
	16.11.61	9	17.6	12.3
	8.12.61	10	17.5	11.5
Newly Introduced Grasses:—				
<i>Panicum coloratum</i> ...	30.10.61	2	23.0	12.8
<i>Brachiara ruziziensis</i> ...	16.11.61	2	15.0	17.0
<i>Slender guinea</i> ...	16.11.61	2	18.0	11.8
<i>Nandi setaria</i> ...	16.11.61	2	17.0	12.5
<i>Cenchrus setigerus</i> ...	16.11.61	2	16.0	17.8

The protein content of the Rhodes Grass remained constant 9 months from the time of sowing. A slight fall of protein was noticed in December which may be explained by the luxuriant summer growth.

MILK

301. The monthly check of the fat content of milk from Curepipe Livestock Station and Richelieu Experiment Station was continued. The monthly average for both stations are shown below:—

(a) CUREPIPE LIVESTOCK STATION

[illegible]

(b) RICHELIEU EXPERIMENT STATION

Month	No. of Cows	Average for the Month
January	5	4.04
February	5	4.04
March	6	3.92
April	6	4.70
May	6	3.88
June	7	3.97
July	7	4.21
August	8	3.71
September	7	4.06
October	6	3.42
November	5	3.72
December	4	3.93
AVERAGE FOR THE YEAR		3.97

The percentage of cows giving 4-5 per cent fat was lower than the preceding year. A higher percentage was found to give between 3.5 and 4.5 per cent butter fat. The monthly average fat content for Richelieu (3.97 per cent) was lower than that for Curepipe (4.16 per cent).

SOIL

302. Soil samples from tea plantations of several localities were analysed for their pH values. The average figures for the different localities are given below:—

Locality	Mean pH of samples
Wooton	4.9
Belle Rive	4.8
Midlands	4.7
Marc Anguille	5.5
Bois Chéri—Mexico	4.8
La Flora	5.1
Pont Colleville	5.7
Nouvelle Découverte Seed Gardens	5.7
Salazie Seed Gardens	5.4
Vuillemin	5.0
Corson	5.2

Mechanical Analyses and pH determinations were performed on samples of soil from Stations.

SILAGE

303. Complete analysis of samples of silage was carried out as a control on the feeding value of silage made on Stations and in demonstration silos in Villages.

MISCELLANEOUS

304. *Gossypol*.—The extraction of gossypol was tried on a sample of cottonseed cake received from Lourenzo Marquès in August. The method as published by M. Podolskaia and M. Serga in "Annales de Chimie Analytique" 1935 was adopted. The Cottonseed cake was found to contain 0.025 per cent gossypol; the normal content allowed being 0.02 per cent.

305. The study of recent methods of analysis of Calcium and Magnesium in plants is still in progress.

XXI. Engineering Division

306. Cyclone reconstruction work was completed. Two new buildings, the Extension Service Offices and a Store were completed at Redit. The dark room of the College of Agriculture was reconditioned. Electricity has been supplied to the Central Workshop and all tools have been connected. Machines and equipment received by other divisions were assembled as required at the Central Workshop.

SERVICING OF DEPARTMENTAL MACHINERY AND VEHICLES

307. Servicing and repairs of all machinery of the Department were carried out at the Central Workshop. Complete records of these repairs and servicing were kept in the workshop records. 152 vehicles, 52 tractors, 64 other agricultural machines were serviced and repaired. In addition the following work was undertaken:—

- (a) Assembly of 1 subsoiler, 2 auto scythes, 1 disc plough, 1 spring tined tiller, 1 spinner broadcaster, 1 maize sheller.
- (b) Building 2 wooden lorry bodies and painting cabins of 2 lorries.
- (c) Manufacture of 7 iron doors, 4 gates, dexion racks and an ox cart.
- (d) Overhaul and major repairs of 4 trailers.
- (e) Painting 2 trailers and 1 water tank trailer.
- (f) Manufacture of 1 terracing staff.
- (g) Vulcanising 50 tubes.
- (h) Fitting 50 tyres.
- (i) Flattening and bundling 700 empty drums.
- (j) Engine block changed on 1 tractor.

308. The following equipment and accessories were fabricated, installed or reconditioned:—

- (a) Sign board and chimney for fumigation plants.
- (b) Cone for spraying lance.
- (c) 10 map boxes.
- (d) Rack for water trailer.
- (e) Net for kale rake.
- (f) 1 silencer and air filter for Fiat 25.
- (g) Chute for blower.
- (h) 4 sign posts.
- (i) 1 college laureate board.
- (j) A variety of foundation and other bolts, hooks, hinges, brackets and supports.
- (k) 2 weighbridges at Palmar and Curepipe.
- (l) Fumigation plant at Fort George.
- (m) Jiffy seed machine.
- (n) Petrol pump and tank at Curepipe Experiment Station.

PLANNING AND CONTROL OF DEPARTMENTAL BUILDING WORK

309. The following buildings and structures damaged by cyclone *Carol* were repaired by the division:—

(a) Workshop doors at Richelieu Experiment Station.

(b) Fertilizer store.

(c) Ongole cowshed at Palmar.

(d) Extension building at Mapou.

310. Work was started upon the following new constructions for the Department:—

(a) Insectarium.

(b) Two greenhouses.

(c) Animal Health Laboratory.

LIVESTOCK FEED FACTORY

311. Two thousand nine hundred and eighty-five metric tons (net) of concentrates were manufactured from Wheat Bran, Maize, Groundnut, Cotton seed cake, Fish meal, Oats, Bone meal, Cod liver oil, Skimmed milk powder, Butter milk powder, Vitamin: Trelco D3, Trelcovite, T.F.P. Super, Molasses, Broad beans, Nitrofurazone, Pollard, Lucerne fish soluble dried, etc. The different kinds of feeds offered for sale were: poultry feed, chick feed, cow feed (cubes), pig grower, pig starter, creep feed, rabbit feed, bull feed, calf feed, special cattle feed, horse feed, special horse feed, mineral mixture, ureated molasses, cow feed (loose), etc. The total sales for the year amounted to three thousand and fifty-eight metric tons (gross for net).

MANUFACTURE OF YEAST TABLETS

312. Fifteen million three hundred thousand tablets were manufactured from imported yeast powder. Fifteen million eight hundred and ninety thousand tablets were sold to Government Departments and one hundred and sixty thousand eight hundred tablets to the public.

FINANCE

313. A statement of revenue and expenditure of the Livestock Feed Factory is given in Appendix "E."

XXII. Fisheries

314. The duties of the Branch are to enforce the provisions of the law regulating fisheries in territorial waters and to study, recommend and implement such new measures as may be necessary for the better protection of fish. It also collects statistical data, takes all steps necessary to improve the efficiency of the industry and the welfare of the fishing community.

OYSTER CULTURE

315. The installations made during the second visit of Professor Pierre Lubet in November—December, 1959, did not suffer cyclone damage in December. The growth of the young oysters distributed for farming was encouraging. A new breeding centre was created at Pointe de Flacq by private enterprise. One thousand collectors were supplied and installed in November. Collectors were also supplied to Montagu breeding centre where breeding is in full progress.

CONSTRUCTION OF FISH SHEDS

316. During the year, the erection of two sheds—one at Mahebourg and one at Trou d'Eau Douce—was commenced by the Ministry of Works.

SEA FISHING

317. Fishing condition improved somewhat during the year. Boats were built through loans made available by Government to help fishermen who had lost their craft during cyclones *Alix* and *Carol*.

318. Controlled catch per quarter (tons).

			Average 1951-59	1960	1961
1st Quarter	...	...	410.5	246.1	451.4
2nd Quarter	...	...	421.8	375.6	427.7
3rd Quarter	...	...	335.3	312.2	277.3
4th Quarter	...	...	434.3	434.3	331.0
			1,602.1	1,368.2	1,487.4

319. The catch of the net fisheries during 1961 compares favourably with that of 1960 and is greater than those of the years 1957-59 when the close season was applied:—

Year			Catch (Tons)	% of Total controlled Catch
1951-55	...	...	410	25.0
1956	...	...	372	22.5
1957	...	...	364	21.8
1958	...	...	319	19.7
1959	...	...	342	26.3
1960	...	...	418	30.6
1961	...	...	413	30.5

320. The total controlled catch, though better than 1960, was lower by 63 tons than the average for the years 1956-60:—

Year			Average Catch (Tons)	Difference with the average
1946-50	...	...	1,492	-58
1951-55	...	...	1,637	+87
1956-60	...	...	1,520	-30
1960	...	...	1,368	-182
1961	...	...	1,487	-63

321. The contribution to the catch by the various modes of fishing was as follows:—

				Catch in Tons			
				Average 1951-55	Average 1956-60	Catch 1960	Catch 1961
Nets	...	...	...	410	363	418	414
Basket Traps	...	...	...	715	628	492	596
Lines	...	...	...	247	275	253	248
Octopii	...	...	...	238	219	177	193
Lobsters	...	...	...	27	28	18	25
Harpoon fish	...	...	...	—	7	10	11
TOTAL	...	...	...	1,637	1,520	1,368	1,487

TYPES OF FISH CAUGHT

322. Status of fish species (in kilos):—

				Kgs.
Capitaine (<i>Lethrinus nebulosus</i>)	...	...	...	34,701
Dame Berry (<i>Lethrinus mahsena</i>)	...	...	...	64,727
Battardet (<i>Lethrinus harak</i>)	...	...	...	28,744
Caya (<i>Lethrinus recticulatus</i>)	...	...	...	46,434
Cordonniers (<i>Siganus spp</i>)	...	...	...	237,624
Rougets (<i>Mullus</i>)	...	...	...	59,882
Mullets (<i>Mugil spp</i>)	...	...	...	78,023
Vieilles (<i>Serranidae</i>)	...	...	...	77,309
Licornes (<i>Naso spp</i>)	...	...	...	172,081
Other species	...	...	...	468,997
Octopii	...	...	...	193,439
Lobsters	...	...	...	25,657
TOTAL CATCH	...	...	...	1,487,618

LOANS TO FISHERMEN

323. The scheme of loans to fishermen for the construction of new boats, started in 1960, was continued during 1961. The maximum amount that can be obtained as a loan was fixed at Rs 500 with interest at $2\frac{1}{2}$ per cent and a minimum monthly repayment of Rs 7. Loans amounting to Rs 150,400 were granted to 310 persons and a large number of applications were still outstanding at the close of the year. Refunds of loans which were collected monthly by the Fisheries Inspectors were satisfactory.

DETECTION OF FRAUD

324. The results of the control exercised by the Inspectorate are given below:—

Year	Cases prosecuted	Convictions	Total contraventions	Illegal nets	Explosives	Total of fines Rs
1953 ...	515	508	550	129	16	16,172
1954 ...	586	571	635	148	44	15,256
1955 ...	473	463	524	110	54	15,036
1956 ...	390	382	436	117	35	11,059
1957 ...	403	396	509	101	30	11,689
1958 ...	429	423	466	115	26	12,360
1959 ...	319	305	421	83	40	10,518
1960 ...	230	229	330	67	23	7,477
1961 ...	248	243	325	100	27	9,971

FRESH WATER FISHERIES

Development

325. Owing to the prolonged drought in the early part of the year all the fishponds suffered from lack of water and nearly all the trials were badly affected. The two ponds at Richelieu Experiment Station remained dry throughout the year. Fry $1\frac{1}{2}$ to 2 cms long, of "Catla Catla" were received from India by air on 6th September and were kept at the Curepipe Experiment Station. Unfortunately, the consignment took 5 days to reach Mauritius and consequently a good number of the fry were dead on arrival. 15 fingerlings survived. They have grown to 4-5 inches in length in 4 months with an average individual weight of 30 grams.

Investigations

326. The results of trials with *Tilapia machrochir* and *Tilapia nilotica* which were laid down in 1960 and completed during the year to test productivity under mono-sex culture and in association with livestock, are recorded below:

- (a) Two small ponds with a cowshed on the bank separating the ponds were stocked at the rate of 2,000 fingerlings per acre in March 1960 with *T. machrochir* and *T. nilotica* in equal proportion. The fingerlings were sexed; one pond received the males and the other the females. In March 1961, the ponds were drained and the fish weighed. The pond stocked with males yielded 843.6 pounds of fish per acre while the pond stocked with females gave 350.9 pounds of fish per acre.
- (b) Concurrently with (a) above, two small identical ponds, not manured with effluent from a cowshed, were first given a basic treatment of 200 pounds per acre of a mixture of 200 pounds of sulphate of ammonia, 200 pounds single superphosphate and 100 pounds of sulphate of potash, following which they were stocked with 2,000 male fingerlings per acre in one pond and with 2,000 female fingerlings per acre in the other of *T. machrochir* and *T. nilotica* in equal proportion. When drained a year later, the yield of fish was 857.4 pounds per acre from the pond stocked with males and 342.3 pounds per acre from that stocked with females.

It seems therefore from trials (a) and (b) above that the effluent and manure from a cowshed is as effective as artificial fertilizers in fish production. The algal growth was very good in all four ponds throughout the year.

- (c) In November, 1960, two ponds A and B were given a basic dressing of sulphate of ammonia at the rate of 200 lb/per acre, sulphate of potash at the rate of 100 lb/per acre, single superphosphate at the rate of 200 lb/per acre, lime at the rate of 600 lb/acre, and farm-yard manure at the rate of 10 tons/acre. They were stocked in December, 1960, with fingerlings of *T. machrochir* and *T. nilotica* in equal proportion and at the usual rate of 2,000 fingerlings per acre of pond. Pond A received the females and pond B the males and in addition pond A had a flock of ducks in association. A third

pond C was treated in the same way and at the same time and stocked with fingerlings of the two species in equal proportions but unsexed. In December the three ponds were drained with the following results:—

Pond A gave 736.7 pounds of fish/acre

Pond B gave 733.2 pounds of fish/acre

Pond C gave 405.9 pounds of fish/acre

Only fish of a size that could be marketed were weighed for yield comparisons. In view of the fact that during the early part of the year a prolonged drought seriously affected the level of water in ponds B and C without seriously affecting the level in pond A, these figures are not truly comparative.

XXIII. Rodrigues

327. A drought which extended from the last months of 1960 into March–April of 1961 delayed harvest until June–July. As a consequence, there was a shortage of home grown food and of fodder. Relief work on road construction and anti-erosion measures was instituted; extra milk rations and soup were given to school children by Government; and the Red Cross issued famine rations from centres all over the island.

328. Weather conditions were favourable during the winter months and late planted maize gave a good crop. Towards the end of the year, satisfactory rains fell and the island farms were all fully planted. Owing to the drought, onion yields were poor and there was an island wide failure of the onion seed crop. Mango trees were in full fruit in December, for the first time since the 1959 cyclone, some Jamrosa trees were also in fruit but they have not yet fully recovered from the cyclone of 18 months ago. The young tree plantations made in the latter half of 1960 were badly affected by the drought and replacements had to be supplied.

329. Cattle owners reported high mortality in their herds but most of the deaths were of animals which were old and not of much market value. The owners seldom selectively cull their herds so that "natural culling" during a drought is to be expected. A few owners co-operated in a scheme to sell off their weaker animals on relief work pay days at a price of 3 lb of beef for Rs 2. The Department encouraged local farmers to slaughter their pigs at Breeding Centres in order to make available good meat to the population. This has become a popular practice.

PRODUCTION AND MARKETING

330. It has been recognised for several years that the marketing of the agricultural and fishery produce of Rodrigues was unsatisfactory. A marketing expert from Canada visited the island to survey the problem and advise. The Department made available to the pig market six large dial pig weighing scales to replace the traders small, difficult to read, Roman balances. The pig scales have completely replaced the Roman balances and are popular and ensure that the producer knows the true weight of his pig when sold. A cattle weighing crush was also made available but is not being used as the owners and buyers prefer to estimate weight by eye.

331. The M.V. *Mauritius* made seven trips to Rodrigues and the *Sir Jules* two trips. The following table records the produce exported to Mauritius by each sailing.

Ship	Date		Cattle	Sheep and Goats	Crates of Fowls	Pigs	Onion Bags	Garlic Bags	Bean Bags	Acacia Bags	Salt Fish Bales	Octopus Bales
M. V. Maur. ...	28. 2.61	108	883	76	308	11	6	13	40	269	114	
" ..	18. 4.61	2	642	34	177	1	—	12	271	619	115	
" ..	22. 6.61	—	712	36	144	24	4	—	185	527	243	
" ..	25. 7.61	216	675	45	308	—	—	8	52	140	79	
" ..	24. 8.61	23	699	39	355	87	9	5	41	152	101	
M. V. Sir Jules ...	30. 9.61	80	260	40	92	324	127	7	158	228	142	
M. V. Maur. ...	4.11.61	198	763	160	438	1,089	47	10	50	375	179	
M. V. Sir Jules ...	26.11.61	52	181	62	37	2	1	—	41	88	60	
M. V. Maur. ...	9.12.61	91	839	158	349	231	27	—	42	51	57	
TOTAL	...	770	5,654	650	2,258	1,769	221	55	880	2,449	1,090	
				or		or	or	or	or	or	or	
				31,200		265,350	33,150	9,350	149,600	489,800	218,000	
				head		lb	lb	lb	lb	lb	lb	

332. The approximate value of these main exports was:—

	Rs
770 cattle at Rs 200 each	154,000
5,654 sheep and goats at Rs 30 each	169,620
31,200 poultry at Rs 4 each	124,800
2,258 pigs at Rs 90 each	203,220
133 tons onions at Rs 350 per ton	46,550
17 tons garlic at Rs 1,000 per ton	17,000
10 tons beans at Rs 1,200 per ton	12,000
75 tons acacia at Rs 400 per ton	30,000
2,450 bales fish at Rs 90 per bale	200,500
1,090 bales octopus at Rs 120 per bale	130,800
TOTAL	1,108,490

333. The export of all commodities was down on last year except for cattle where 155 head more were exported. A total drop of Rs 249,300 in export value was incurred. This is largely due to the drought, the higher local consumption of pig meat and the increasing local use of acacia meal as a cow feed for the growing dairy industry.

LAND SETTLEMENT

334. During the year, it was decided that the Department of Agriculture should take over the responsibility of the Land Office and collection of animal taxes. To enable this work to be undertaken, it was decided that the staff of the division would have to be strengthened by both an Executive and

a Clerical Officer. A detailed map of Rodrigues was also drawn up showing on it the newly developed farms suitably numbered in named areas. Also the types of land leased were defined as follows:—

VEGETABLE PLOTS

335. These are $\frac{1}{3}$ of an acre plots and are situated on the richer alluvial flats and river valley bottoms of the Island. Rice as well as vegetables may be grown on these plots.

LOWLANDS FARMS

336. These are farms situated in the cattle walk where the topography is generally flatter than the uplands and where, as a result, the farms can be accurately measured. They are leased on an acreage basis; farms are on average 2 acres in size.

UNIT FARMS

337. These are farms situated on the steep slopes of the uplands on rehabilitated land, marked out, but not accurately measured. The unit farms are between 1 and 2 acres in extent.

338. During the year a further 589 farms were prepared and the total of each type at the end of the year since the inception of the scheme was as follows:—

			<i>As at end of 1960</i>	<i>As at 30.6.61</i>	<i>As at end of 1961</i>
Vegetable Plots	...	...	835	835	844
Lowland Farms	...	...	194	384	406
Unit Farms	...	...	695	887	1063
TOTAL	...	...	1724	2106	2313

EXPERIMENT AND DEMONSTRATION PLOTS

339. The coconut plantations at Oyster Bay and Baie du Nord were maintained and were in full fruit at the end of the year. The nuts are to be kept as seed supply. The young plantations at Ilot Chat and Anse Ally made satisfactory growth.

340. The ten demonstration farms scattered over the Island were maintained. Their usefulness in demonstrating mixed conservation farming was brought out by studying the sales of stock made to local farmers from the Breeding Centres over the past four years:—

<i>Year</i>	<i>Dairy Cattle</i>		<i>Pigs</i>		<i>Young Female</i>
	<i>Adult Female</i>	<i>Young Male</i>	<i>Adult Female</i>	<i>Young Male</i>	
1958	...	1	—	13	—
1959	...	7	—	35	5
1960	...	39	6	135	74
1961	...	38	1	220	178
TOTAL	...	85	7	403	257

LIVESTOCK BREEDING CENTRE

341. The stocking of the centres by type at the close of the year was as tabulated below:—

Centre	Pigs				Total
	Adult Male	Adult Female	Young Male	Young Female	
Oyster Bay	4	14	30	30	78
St. Gabriel	2	15	44	35	96
Le Chou	1	10	25	47	83
Marechal	2	7	11	14	34
B. Topaze	1	15	35	43	94
Demonstration Plots ...	2	12	9	16	39
TOTAL	12	73	154	185	424

Centre	Dairy Cattle				Total
	Adult Male	Adult Female	Young Male	Young Female	
Oyster Bay	3	12	5	21	41
St. Gabriel	1	35	6	8	50
Le Chou	1	23	7	23	54
Malabar	2	8	1	45	56
Marechal	2	16	4	26	48
B. Topaze	1	23	4	11	39
TOTAL	10	117	27	134	288

Centre	Goats				Total
	Adult Male	Adult Female	Young Male	Young Female	
Oyster Bay	3	34	41	11	89

Centre	Sheep				Total
	Adult Male	Adult Female	Young Male	Young Female	
Gombrani Isle	6	15	6	12	39

342. A study of the analysis of breeding table for pigs and dairy cattle is of interest:—

Centre	Pigs						Weaning %
	No. of Farrowings	No. of Piglets	No. of Piglets died	Males Born	Females Born	Average No. Litter	
St. Gabriel	28	208	60	120	88	7.4	70%
Le Chou	20	165	34	95	70	8.2	80%
Oyster Bay	13	125	21	67	58	9.6	84%
Marechal	9	76	7	41	34	8.4	90%
B. Topaze	20	130	32	70	60	6.5	76%
Demonstration Plots ...	13	83	2	36	47	6.4	97%
TOTAL	103	787	156	429	357	7.6	80%

<i>Centre</i>	<i>Dairy Cows</i>			
	<i>No. of Calvings</i>	<i>Males Born</i>	<i>Females Born</i>	<i>Deaths</i>
St. Gabriel ...	24	14	10	1
Le Chou ...	21	12	9	1
Oyster Bay ...	11	9	2	2
Marechal ...	21	7	14	2
B. Topaze ...	19	13	5	—
Malabar ...	19	13	6	1
TOTAL ...	115	68	47	7

343. A total of 38 young calves, 23 males and 15 females, were bought from unit farms for rearing in the breeding centres. A total of 104 cattle and 399 weaner pigs were sold to small farmers.

344. The production of ghee and fresh butter was commenced at all breeding centres. A test shipment of 1,101 bottles of ghee was sent to Mauritius. It was decided during the year to centralise the processing of cream into ghee and butter at one Breeding Centre.

345. A total of 272,562 lb of milk were produced in the centres from 25,733 cows in milk days; an average of 10.5 lb of milk per day per cow in milk.

346. Cattle were fed a production ration consisting of acacia seed mixed with cane molasses. The staple fodder was elephant grass. Elephant grass and maize stalk silage mixed with some molasses was made with success in concrete pit silos.

347. A large number of small farmers took manure from the Breeding Centres. It was given free as an incentive to the use of manure on their farms.

CATTLEWALK

348. The annual cattle census was carried out in March with the following results:—

<i>Bulls</i>	<i>Bullocks</i>	<i>Cows</i>	<i>Calves</i>	<i>Total</i>
793	260	3,354	1,537	5,944

There were 599 owners; one man owns 575 head of cattle and there were 68 owners who had 20 or more head totalling 3,002 head.

349. A total of 770 head of cattle were exported and it was estimated that 130 head were killed for local use, giving a total production of 900 head sold off the cattlewalk. Under good management, these animals should be 4 years old when sold which means that a total of 4,500 head is required to maintain an annual production of 900 head for sale. The high mortality during the dry season could be greatly reduced if efficient marketing and culling were practised. Better quality beef and quicker maturity could be achieved if more bulls were castrated and controlled breeding and grazing were practised, and calving at the start of the grass growing season was encouraged. These points were explained to owners at meetings held during the early part of the year

when they were alarmed at the dry season death rate. Some owners are reluctant to adopt these practices as they fear that due to communal pasturage, efficient management would be wasted because others were unwilling to co-operate.

350. The introduction of Pangola grass and the early promise shown by this grass under Rodriguan conditions both in the uplands and on the cattle-walk opens up the possibility of developing peasant dairy farms on the cattle walk for the production of butter and ghee, beef and pork and poultry as well as general improvement of the open range coupled with the possibility of rotational grazing of the open range with the use of stone wall fences. With the approval of this policy, a start was made on the development of three 10 acre experimental peasant dairy farms and the determination of ways and means of establishing Pangola on the open range.

MILLS AND MILLING

351. The milling plant at Citronelle operated throughout the year and the building to house milling machinery at Marechal was constructed and the generator installed. At Citronelle the following work was performed. 9,402 lb of maize and acacia seeds were milled for the public. For Government 209,156½ lb of acacia meal, 41,095 lb of maize meal, 14,650 lb of rice paddy meal were prepared by the mill giving a total output of 274,303½ lb. 6,502 lb of paddy were hulled for the public with a hulling percentage of 61. The groundnut crop of 1961 was a failure owing to the drought, only 26 bags being exported. Over the past two years, the Miela groundnut oil expeller has processed 3,628 lb of nuts which have produced 774 lb of oil and 2,392½ lb of groundnut cake. A statement of account on which an assessment of the future of the processing can be based is now given:—

				Rs	c	Rs	c
Cost of 3,628 lb nuts at 30 cents per lb	...	...	...	1,088	40		
Cost of processing 3,628 lb at 8 cents per lb	...	...	...	290	24		
Value of 774 lb oil at Rs 1 20 per lb	...	...	...	—		928	80
Value of 2,392½ lb cake at 25 cents per lb	...	...	...	—		598	12
Profit	...	...	...		148	28	
TOTAL				...	1,526	92	1,526 92

The processing cost of 8 cs per lb includes labour and depreciation costs.

PLANT PROTECTION

352. After several years of demonstration, farmers have now understood the value of spraying onion crops against thrips. During the year under review, the Department sprayed on request 40 acres of onion plots at a nominal fee of Rs 5 per acre.

TREE PLANTATIONS

353. The re-afforestation programme was continued as was the shade tree planting on the cattlewalk. The shade tree planting rate was reduced to 10 trees per acre. Owing to drought there was a sharp rise in the amount of supplying that became necessary.

XXIV. Lesser Dependencies

354. Four principal groups of islands are concerned namely Peros of 2,900 acres, Salomon of 2,000 acres, Diego of 6,000 acres and Agalega of 6,000 acres. The islands produce copra and yields are low.

355. The recommendations for the control of Rhinoceros beetle made a few years ago continue to give promising results and the introduction of possible parasites continued to be given active attention by the Entomologist.

356. The introduction of Zebu cattle to Diego and Agalega from Mauritius can be considered to have failed as only three animals remained alive at the end of the year. Until a study of the husbandry situation on the islands can be made, no further introductions can be contemplated.

357. The opportunity of an officer visiting the islands was given to the Department in September but unfortunately the offer could not be taken up.

APPENDICES

A Staff

(as at 31st December)

Appointment	Name	Remarks
Director of Agriculture ...	A. North Coombes, O.B.E., B.Sc. (Read.), Dip. Agric. (Maur.)	Retired on 1.10.61.
	M. D. French-Mullen, D.I.C.T.A., A.I.C.T.A.	Appointed 1.10.61; on leave 27.2.61 to 20.5.61.
Deputy Directors (2) ...	S. Staub, A.R.C.S.T. (Glas.) A.M.I.Mech.E., Dip. Agric. (Maur.)	Appointed 22.10.60.
	A. Darné, F.R.C.V.S., Dip. Agric. (Maur.)	Appointed 1.10.61.

ADMINISTRATIVE AND FINANCE DIVISIONS

Chief Finance Officer ...	L. Hennequin		
Chief Executive Officer ...	L. Alizart	...	Assumed duty 19.1.61.

In addition there are:

- 3 Senior Executive Officers
- 5 Executive Officers
- 2 Higher Clerical Officers
- 14 Clerical Officers
- 1 Confidential Assistant
- 8 Typist/Stenographers
- 1 Librarian

AGRICULTURAL DIVISION

Appointment	Name	Remarks
Senior Agricultural Officers (3)	... B. D. Roy, B.Sc. Agri. (Wales) Dip. Agr. (Maur.) K. Lutchmeenaraidoo, B.Sc. Agric. (Read.), Dip. Agric. (Maur.) W. Smith, N.D.A., C.D.A., D.T.A., (Trinidad) N.D. Agr. E., A.M.I.B.A.E.	Appointed 8.5.61. Appointed 23.3.61. Left on 12.11.61 on termination of contract.
Animal Husbandry Officer	... J. H. Proverbs, B.Sc Agr. Animal Husban- dry, M.Sc. (Nutrition) J. A. C. Delaitre, B. Agr. (N.Z.) Animal Husbandry	On secondment up to 3.2.61. Appointed 4.2.61.
Agronomists (3)	... L. A. Suzor, Dip. Agr. (Maur.) L. Moorlee, Dip. Agr. (Maur.) 1 Vacancy	 Appointed 1.7.61.
Horticulturist	... J. H. Julien, Dip. Agr. (Maur.)	
Agricultural Officers (9)	P. Regnard J. Marot I. Fakim, Dip. Agr. (Maur.) M. Sooltangos, Dip. Agr. (Maur.) D. Lalji J. S. Moutia, B.Sc. (Hort.) Dip. Agr. Econ. (Oxon), Dip. Agr. (Maur.), F.R.H.S. H. Choolun, Dip Agr. (Maur.) A. Ferrière ... One Vacancy	Acting as Lecturer College of Agric. from 2.10.61. Appointed 1.1.61. Appointed 1.7.61.

In addition there are:

18 Assistant Agricultural Officers	5 vacancies
1 Surveyor	
1 Assistant Surveyor	
8 Overseers, Grade I	
13 Overseers, Grade II	

AGRICULTURAL CHEMISTRY DIVISION

Appointment	Name	Remarks
Chemist ...	S. Belcourt, B.Sc. (Wales), Dip Agr. (Maur.)	
Assistant Chemist ...	J. Pablot	

In addition there are:

3 Scientific Assistants

PLANT PATHOLOGY DIVISION

Plant Pathologist ...	L. Orioux, B.Sc. (Lond.) D.I.C.	
Assistant Plant Pathologist ...	S. Félix, Dip. Agr. (Maur.)	

In addition there are:

2 Plant Inspectors
1 Scientific Assistant

CENTRAL BOARD DIVISION

Registrar ...	P. J. Galea, Dip. Agr. (Maur.)	Appointed 22.10.60.
Assistant Registrar ...	Vacant	
Accountant ...	J. G. Gnany, A.A. C.C.A.	
Senior Asst. Chemist ...	Vacant	
Assistant Chemist ...	R. Thélémaque, Dip. Agr. (Maur.)	Went on leave 9.12.61.

In addition there are:

1 Investigational Officer
and Weighbridge
Inspector

3 Senior Test Chemists

6 Test Chemists ... Vacant

19 Test Chemists ... Employed during
crop only.

25 Samplers ... Employed during
crop only.

AGRICULTURAL COLLEGE DIVISION

Principal ...	J. R. Lagesse, B. Sc. (Lond.)	Retired on 7.8.61.
	A. North Coombes, O.B.E., B.Sc. (Read.), Dip. Agr. (Maur.)	Appointed 1.10.61 on contract.

Appointment	Name	Remarks
Lecturers (3) ...	R. Latulipe, B.Sc. (Lond.)	Acting Principal from 11.1.61 to 30.9.61. Went on overseas leave 2.12.61.
	R. Burrenchobay, B.Sc. (Edin.)	Appointed 1.1.61, on leave 30.7.61 to 31.12.61.
	One vacancy ...	S. Moutia acting as from 2.10.61.

Assistant Lecturers and Laboratory Demon- strators (3)	P. Guerandel, Dip. Agr. (Maur.) F. G. Carver, Dip. Agr. (Maur.) One vacancy
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ENGINEERING DIVISION

Agricultural Engineer ...	E. Limfat, M.Sc., M.A.S.A.E., A.M.I. Agr. E., B.Sc., A.C.G.I., A.M.I., Chem. E.	Went on leave 29.8.61.
Assistant Agricultural Engineer ...	M. Morad, Dip. Agr (Maur.)	Acting Agricultural Engineer from 29.8.61.

In addition there are:

- 1 Scientific Assistant ... On study leave.
- 1 Supervisor, Livestock
Feed Factory
- 1 Accounts Clerk
- 1 Store Clerk
- 1 Temporary Clerk,
Extension Shop

ENTOMOLOGICAL DIVISION

Entomologist ...	J. E. A. Orian, B.Sc., F.R.E.S., F.Z.S., Dip Agr. (Maur.), A.C.R.	
Assistant Entomologist	J. Monty, Dip. Agr. (Maur.)	Appointed 1.2.61.

In addition there is:

One Scientific Assistant

DIVISION OF VETERINARY SERVICES

Appointment	Name	Remarks
Senior Veterinary Officer	J. U. D. Shuja, M.R.C.V.S.	Appointed 1.10.61.
Veterinary Officers (2)	Vacant	
Laboratory Technologist	L. Webb, A.I.M.L.T. (Lond.) Dip. Biol. (Lond.) M.I.Biol. (Lond.)	
Senior Stock Inspector ...	W. Haddon ...	On overseas sick leave 17.8.61 to 18.11.61.
Agricultural Officer (Poultry)	Clifford Gassin, N.D.P.H.	Appointed 1.7.61.

In addition there are:

1 Scientific Assistant
9 Stock Inspectors
18 Livestock Assistants

TEA DIVISION

Tea Officer ...	R. B. J. Deane ...	Returned from leave 5.2.61.
Assistant Tea Officer ...	D. N. Andrews ...	Acting Tea Officer up to 5.2.61.
Agricultural Officer ...	A. Baissac, Dip. Agr. (Maur.)	Appointed 1.1.61. Acting Assistant Tea Officer up to 5.2.61.

In addition there are:

2 Assistant Agricultural Officers
3 Overseers, Grade II*
*(1 permanently seconded to Midlands Tea Estate N.E.T.E.Co.).

FISHERIES DIVISION

Fisheries Officer ...	J. de B. Baissac, A.C.R.	Went on overseas leave 6.12.61.
Chief Inspector ...	J. Momplé ...	Acting Fisheries Officer from 6.12.61.

In addition there are:

3 Inspectors
3 Sub-Inspectors
16 Head Guards
36 Guards ... 6 vacancies.

RODRIGUES DIVISION

Appointment	Name	Remarks
Senior Agricultural Officer ...	P. L. Hotchin, O.B.E., B.Sc. Agr. (Leeds) D.T.A. (Trinidad)	
Agricultural Officer ...	E. Farla	

In addition there are:

2 Assistant Agricultural Officers
1 Overseer, Grade I ... Vacant.
9 Overseers, Grade II
4 Clerical Assistants

B. Composition of the Principal Boards and Committees

(i) BOARD OF AGRICULTURE, FISHERIES AND NATURAL RESOURCES

Ex-officio Members

The Director of Agriculture—*Chairman*

The Conservator of Forests—*Vice-Chairman*

A Deputy Financial Secretary

Members of the Legislative Council

Dr. the Honourable L. R. Chaperon

The Honourable K. Jagatsingh

The Honourable R. Rey

Dr. the Honourable L. Teeluck

Representatives of Millers

Mr. Robert Doger de Spéville

Dr. P. O. Wiehe, C.B.E.

Representatives of Planters

Mr. Maurice Martin

Mr. Hassam Nazroo

Representative of the Chamber of Agriculture

Mr. L. H. Garthwaite

There was one meeting of the Board during the year.

(ii) AGRICULTURAL COLLEGE ADVISORY BOARD

The Director of Agriculture—*Chairman*

Nominated by His Excellency the Governor

The Honourable D. Napal, M.L.C.

Mrs. V. Teeluck, B.A.

Dr. P. O. Wiehe, C.B.E.

Nominated by the Chamber of Agriculture

Mr. R. Hein, Q.C., *Chevalier de la Légion d'Honneur*

Mr. M. de Nanclas

Nominated by the Société de Technologie Agricole et Sucrière

Mr. P. de Sornay, *Officier de la Légion d'Honneur*

Mr. René Leclézio

Nominated by the Association of Former Agricultural Students

Mr. René Noël

The Board held four meetings during the year.

(iii) CENTRAL BOARD

Mr. Magistrate S. Mootoosamy—*Chairman*

Representatives of Millers

Mr. Robert de Spéville

Mr. Francis North Coombes

Representatives of Large Planters

Mr. Roland Ducler des Rauches

Mr. Dhaneswock Sewraz

Representatives of Small Planters

Mr. Bakhar Mungroo

Mr. Jagdeosing Chundunsing

The Board held eighteen meetings during the year.

(iv) TOBACCO BOARD

Ex-officio Members

The Director of Agriculture or any officer of his department deputed by him—*Chairman*

The Commissioner of Excise—*Vice-Chairman*

The Accountant General or any officer of his department deputed by him

The Manager, Tobacco Warehouse

Appointed by His Excellency the Governor on the advice of the Minister

The General Manager of the British American Tobacco Co. (Mauritius) Ltd., or his representative

The Managing Director of the Amalgamated Tobacco Corporation (Mauritius) Ltd., or his representative

Mr. A. G. Rey

Mr. D. Sewraz

Mr. R. Ducler des Rauches

Mr. R. Ramchurn

The Board held fifteen meetings during the year.

(v) LAND SETTLEMENT ADVISORY COMMITTEE

The Director of Agriculture or representative—*Chairman*
 The Senior Agricultural Officer (Extension)
 The Registrar of Co-operative Societies
 The Civil Commissioner (North)
 The Civil Commissioner (South)
 The Civil Commissioner (Moka—Flacq)
 The Civil Commissioner (Plaines Wilhems—Black River)
 The Honourable R. Balgobin, M.L.C.
 Mr. Hassam Nazroo
 Mr. Hurruck Hoolsy

The Committee held four meetings during the year.

(vi) TEA CONTROL BOARD

Ex-Officio Members

The Director of Agriculture—*Chairman*
 The Deputy Financial Secretary (Economics)

Members Appointed by His Excellency the Governor

Mr. P. Boullé—representative of the Chamber of Agriculture	
Mr. J. Pilot	} Manufacturers' representatives
Mr. L. Ramdin	
Mr. A. H. Maderbocus	} Planters' representatives
Mr. M. Ramdin	
The Honourable V. Govinden, M.B.E., M.L.C.	} Other appointed members
The Honourable Y. Ramjan, M.L.C.	
Mr. R. W. Knight	

The Board held twelve meetings during the year.

C. Legislation

Ordinance No. 5 of 1961	: To amend the Sale of Canes (Control) Ordinance, 1961.
Ordinance No. 6 of 1961	: To amend the Tobacco Production and Marketing Ordinance.
Ordinance No. 10 of 1961	: To provide for the control of the distribution of fodder for livestock in times of seasonal fodder shortage.
Ordinance No. 11 of 1961	: To amend the General Cyclone and Drought Reserve Fund Ordinance, 1949.
Ordinance No. 22 of 1961	: To amend the Tobacco Board Employees' Provident Fund Ordinance, 1950.
Ordinance No. 27 of 1961	: To amend the Customs Tariff Ordinance, 1954.
Ordinance No. 29 of 1961	: To amend the Tea Industry Control Ordinance, 1959.
Ordinance No. 33 of 1961	: To amend the Sugar Industry Reserve Fund Ordinance, 1959.
Proclamation No. 21 of 1961	: To authorise the use of large nets for fishing during the period extending from the 1st October, 1961 to 31st January, 1962.
Government Notice No. 4 of 1961	: The Pensions Ordinance, 1951.
Government Notice No. 36 of 1961	: The Tea Industry Control Ordinance, 1959.
Government Notice No. 44 of 1961	: The Tea Industry Control Ordinance, 1959.
Government Notice No. 52 of 1961	: The Tea Industry Control Ordinance, 1959.
Government Notice No. 65 of 1961	: The Fisheries Ordinance, 1948.
Government Notice No. 69 of 1961	: The Civil Establishment Ordinance, 1954.
Government Notice No. 80 of 1961	: The Civil Establishment Ordinance, 1954.
Government Notice No. 81 of 1961	: The Civil Establishment Ordinance, 1954.
Government Notice No. 84 of 1961	: The Pensions Ordinance, 1951.

D. List of Publications and contributions to Literature by Officers of the Department of Agriculture during 1961

<i>Name of Author</i>	<i>Title of Paper</i>	<i>Name, Volume No., Page Nos. of periodical in which published</i>
Delaitre, C.	Causerie sur l'élevage du lapin ...	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 4, pp. 196-199.
Department of Agriculture	Guide de Culture Potagère— <i>revised edition</i> .	Bulletin No. 92—2nd edition.
Department of Agriculture	The Cultivation of maize in Mauritius.	Bulletin No. 93.
Félix, S.	Notes on Septorioses of plants in Mauritius.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 6, pp. 322-325.
Gassin, C.	L'Elevage des oiseaux de basse-cour à Maurice.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 4, pp. 200-203.
Orian, J. E. A.	Notes sur un coleoptere hispine exclusivement palmicole <i>Brontispa Limbata</i> (Waterh).	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 4, pp. 193-195.
Orian, J. E. A.	La défense de nos cultures ...	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 5, pp. 272-275.
Orian, J. E. A.	Les insecticides	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 6, pp. 322-325.
Orieux, L.	The control of plant diseases ...	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 3, pp. 148-150.
Orieux, L.	Le moyen de lutter avec succès contre les principales maladies des petites cultures à Maurice.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 3, pp. 151-155.
North Coombes, A.	Past essays of cash crops in Mauritius.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 4, pp. 183-192.
Smith, W.	Soil erosion in Mauritius ...	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 6, pp. 309-317.
Staub, S.	The Sugar millers' and planters' Central Arbitration and Control Board.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 3 pp. 133-137.
Wright, W. A.	Results of work done on the production and conservation of fodder crops.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 1, pp. 46-48.
Wright, W. A.	The potato industry of Mauritius.	Revue Agricole et Sucrière de l'Ile Maurice, Vol. 40 No. 3, pp. 138-147.

DEPARTMENT OF AGRICULTURE

E. Richelieu Livestock Feed Factory

STATEMENT OF REVENUE AND EXPENSES FOR THE YEAR ENDED 30TH JUNE 1961

EXPENSES		Rs	c
Stock of materials on 1.7.60:—	218,390 82		
Raw materials	30,324 67		
Less amount not paid in 1959/60			
Manufactured feeds	187,866 15		
Aloe bags	9,974 10		
Less amount not paid in 1959/60	1,715 00		
	700 00		
	1,015 00		
		198,855	25
Purchase of raw materials and bags:—			
Lucerne	68,251 00		
Oats...	59,069 57		
Wheat grain	1,874 25		
Meat meal	84,222 50		
Poonac	2,814 00		
Cod liver oil	9,837 20		
Gram	660 00		
Urea	940 00		
Bran & pollard	299,825 44		
Milk, casein and whey powders, etc.	15,132 31		
Cotton seed cake	33,056 55		
Fish meal	23,640 72		
Maize	308,933 97		
Groundnut cake	72,714 62		
Salt	2,235 60		
Bone meal	15,013 75		
Minerals	714 25		
Wheaten flour	3,000 00		
Molasses	21,106 14		
Vitamin	6,245 79		
Aloe bags	70,971 95		
		1,100,259	01
Electricity	6,674 10		
Transport	12,726 13		
Stores	1,004 30		
Wages	52,881 20		
Travelling	555 75		
Office expenses	378 37		
Insurance	445 58		
Maintenance of lorry	2,847 37		
Rent of extension Shop, Rose-Hill	2,400 00		
Net Profit	21,377 20		
TOTAL		1,400,404	26

F. CONVERSION TABLE

1 Arpent	...	...	1.043 acres
1 Gaulette	...	...	10.6 feet
1 Metric Ton	...	...	1,000 kilos
1 Long Ton	...	...	1,016 kilos
1 Kilo	...	...	1,000 grams
1 Pound avoirdupois		...	454 grams
1 Hundredweight	...	...	50.803 kilos
1 Cord	...	...	92.82 cubic feet
1 Imperial gallon	...	...	4.54 litres
1 Rupee	...	...	1/6d. sterling

